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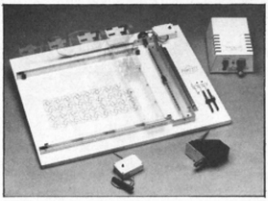

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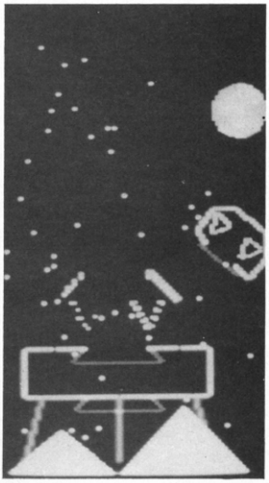

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Privacy probe looms

By Ralph Bancroft

Thousands of micro users could soon find Government inspectors checking up on them under the Data Protection Act.

The new Act's main provisions come into force next year. It applies to anyone (including clubs and individuals) who operates a computer system that holds information relating to an individual who can be identified from the information.

Under the terms of the Act, an individual has the right to know if information on them is held on a computer; to inspect the information; and to request that any incorrect information be changed or removed.

The Act will be policed by a Registrar who has powers to ensure such corrections are made.

The Registrar, who takes up the post in September, will be Eric Howe, currently deputy director of the National Computing Centre.

The NCC has already been inundated with inquiries about the implications of the Act and as a result has just published a layman's guide to how the legislation works.

And it is clear from the guide that users of home micros could well be in the firing line.

Clubs — will the Data Protection Act point the finger at their records?

The only exemptions from the Act, apart from payroll records and information dealing with regional security, are where the information is kept for domestic or recreational purposes.

So it would appear that keeping names, addresses and telephone numbers of friends on your home micro is outside the scope of the Act. Similarly, a sports club that runs a computerised mailing list of club members is also exempt.

But anything wider than this could require registration under the Act.

For example, a club that keeps a computerised list of people who have contributed, or are likely to do so, to a fund-raising appeal may have to register.

The registration provisions under the Act will probably not come into force until the middle of next year (no date has been set). It will then take some time before the dividing line between those exempt and those not is firmly drawn.

'I can only give a ruling on an individual case if someone writes to me,' said Mr Howe. 'It will take a lot of case decisions before a sharp picture emerges. At the moment the edges need closer definition.'

It is unlikely that Mr Howe will take a Draconian approach. 'I would like to try and make common sense prevail,' he said.

Guide to the Data Protection Act, National Computing Centre, Oxford Road, Manchester M1 7ED, price £1.50

Act timetable

It's a long and winding road that data protection and privacy has travelled in this country, leaving the UK well behind other countries in implementing legislation to protect the individual.

Milestones along that road include:

■ December 1978: The Lindop Committee, named after its chairman Sir Norman Lindop, becomes the latest committee to report to the Government on the issues involved and recommends a series of codes of practice backed by a Data Protection Authority with wide powers.

■ December 1982: The Government follows up a White Paper with its first Data Protection Bill. It rejects the Lindop approach, preferring instead compulsory registration with the individual having the right to inspect the information held and to demand changes or erasure.

■ May 1983: Bill bites the dust because of General Election.

■ June 1983: Government publishes revised bill.

■ July 12, 1984: Bill completes weary passage through Parliament and gets Royal Assent.

Synapse makes connection

Some of the best-known American Commodore software is about to arrive in the UK — with a price cut and a change of name along the way.

Titles such as Zaxxon, Fort Apocalypse and Blue Max from Synapse Software of California have been available here in a limited way for some time at £25. But the formation of US Gold (021-520 7591) will put them into the shops for £9.95 and square things with British law at the same time.

After 18 months' negotiations and wrangling Synapse Computer Services of Chesham, Bucks, has won a high court injunction to stop the US software company using its name in this country. Distributors such as Softsel have been unable to bring in Synapse products as a result. But US Gold will market the game under licence from Synsoft, a name registered here by Synapse Software to comply with the terms of the injunction.

US Gold will also manufacture the games here, which according to the company's Jeff Brown is where the potential to cut prices has come from.

Commodore versions are due to be launched on September 17, followed by Atari. Five weeks later, US Gold expects to have Spectrum versions ready.

Synapse software has been enormously successful in the US but not easily available here. Mr Brown commented: 'Everybody wanted it but nobody could get it unless it came in through the back door.'

Killjoy Rat

With cries of 'The joystick is dead, long live the Rat,' Cheetah Marketing led out its infra-red games controller (issue 75) to an expectant public last week.

The Rat (Remote Action Transmitter) and its signal receiver will let you annihilate aliens from 30ft. For now it works only with the Spectrum, but Cheetah says other versions are in the pipeline (sewer?). Its infra-red signals, tramsmitted from the ergonomically-designed Rat's nose, won't interfere with other products such as televisions or video recorders, and you only have to wave it vaguely in the direction of the receiver to make the connection.

The device looks more like a cordless razor or hi-tech blancmange mould than a rat, but who wants rats lying around the house?

The receiver plugs into the Spectrum's edge connector and includes a through-connector to let you use other peripherals at the same time.

The price is £29.95 and you'll be able to buy Rats from various dealers and high street stores.

Rat — cordless for a clean kill.

Fuller figures in sorry saga

By Ralph Bancroft

One day someone will write a best-seller about the comings and goings of the Liverpool micro industry.

To be followed, of course, by the film and the TV series.

To give you a glimpse of the saga's complexity here is a resume of last week's episode.

Fuller Designs, the 'we will take your money but can't say when you will get the Spectrum keyboard' company (issues 34, 48, 55, 59), has called in a receiver and invited disgruntled creditors to a meeting.

Fuller used to use Studio Sting, the now defunct advertising and publicity operation run from within the more recently defunct Imagine Software (issues 69,70,74).

Another client of Studio Sting was Voyager Software, a company set up by Roy and Beryl Butler (parents of Mark Butler, an Imagine director) which earlier this year took over the business of Acme Software set up by Mr & Mrs Butler, with Bruce Everiss (Imagine director until a few days before it crashed) as one of its directors.

Tim Best, former spokesman for Imagine, phoned to say he has now joined Voyager along with some of Imagine's programmers and some exciting new products are on the way.

By the way, he mentions that Heather Lamont (director of the now defunct Rabbit Software — see issues 69 and 70 — and friend of Mark Butler) has also joined to 'do publicity and that kind of thing.'

Meanwhile back at Imagine, Christopher Chambers, the liquidator appointed by Imagine's numerous creditors, says that negotiations are still proceeding for the sale of the defunct company's much-vaunted megagames. 'They are before their time,' he says.

Atari on air

Atari UK has been on and off the air like a pirate radio station since its change of ownership but you should see normal service resumed next week.

It effectively closed down during the period of Jack Tramiel's take over (issue 69) and opened for business again at the end of July. But within the last two weeks it has gone into neutral again, preparing for an autumn offensive that should begin on September 1.

'There's always a stock-take when a company's taken over,' a spokesman said. 'In the last week and a half or so we closed down during a quiet period, mainly to install a new computerised inventory and stock control system to come on stream in time for September 1.'

This is the date from which Atari's new prices on the 600XL, 800XL, and peripherals become effective (issue 75). Software prices too are for the chop — from September 1 software for the VCS systems and home micros will come down in price to £9.99. All these moves are aimed at boosting Atari's sales and the software price changes are particularly overdue — in the week of the Tramiel takeover, Thorn-EMI's Creative Sparks announced its intention of leaving the Atari software field on the grounds that the prospects for sales weren't good enough.

Dealers have responded with mixed feelings to the ups and downs at Atari. One commented: 'It's not a stock-take, it's a 'let's see what we can get rid of'; you won't get anything out of them until September 1 but after that you can have anything.' Another more charitable dealer said that apart from delays during the shut-down periods there had been no problems. 'We have good supplies of spares and service, and good access to those (at Atari) who matter — and they've not been sacked, thank goodness.'

One development you might expect from the rejuvenated, cut-price Atari is the 1450XLD business system later this year. The 1450XLD is the double-disk drive version of the 1450XL scuttled by James Morgan, head of Atari prior to the takeover.

■ Commodore dealers expect Atari's cuts to have little effect on sales of Commodore machines. A spokesman for Gulteronics, in London, said: 'We stopped selling Vic 20s about six months ago because there was little demand. But the 64 is going well.

Also there's such an abundance of software for the machine that there's no real competition between the Commodore and XL range. Commodore has a strong hold on the low end market.'

The manager of Tomorrow's World Today shared the same view, saying: 'Let's face it, there's not enough software for the Atari machines.'

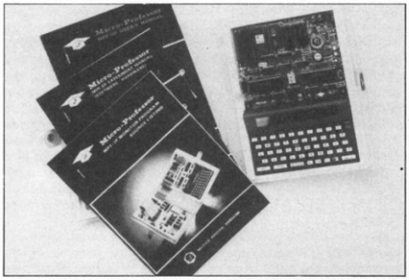
Micro Professor dons the mortarboard again . . .

Apple's legal department might be limbering up this morning with the reappearance of Micro Professors in the UK, but the MPF-1P shouldn't tax them too much. It is based on a Z80.

Pelco Electronics (0708 61911) launched the MPF-1P last week as a Z80 tutor for students. The machine comes from Multitech, maker of the controversial MPF-II, reviewed by *PCN* (issue 9) and withdrawn from the UK when Apple claimed it infringed Apple copyrights. The MPF-II was a 6502-based system that claimed 'Applesoft compatibility'; it cost £269 — truly a bargain for Apple II fanciers.

The MPF-1P is an upgraded version of a single-board Z80 device, and in Pelco's catalogue it will complement the Rockwell Aim 65, a board-level 6502 system. It comes with 4K of RAM, 8K of ROM, a built-in power supply, 49-key keyboard and a 20 digit alphanumeric display. For that you pay £150.

Multitech manufactures add-on modules covering such features as I/O, sound generation and speech synthesis. These range in price from £40 to £90.



The new Micro Professor MPF-1P — no clash with Apple.

Cricket season opens on IIc

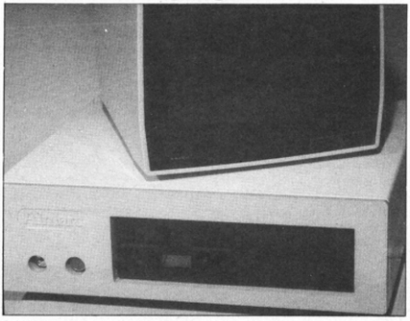
A sound add-on called Cricket won't improve your batting average but it will enhance your Apple IIc.

For £171 you get some software, a built-in speaker, volume control, mini-stereo headphone jack and a cable to link up to the IIc's modem port. Once up and running you can produce natural and robotic voices, sound effects, music and it has a clock. With practice you might generate leather on willow.

Using Texas Instruments' 5220 speech chip, the Cricket features six channels of music and sound effects. The software has a number of built-in sound effects which can be added to programs. The clock built into the Cricket provides automatic dating of your ProDOS files and features music, sound and voice options to wake you up.

The Cricket's distributor is P & P Micro (0706 217744).

. . . and Almarc Spirit comes back in Uniqix guise



Spirited comeback — Uniqix gives Almarc name an airing.

Welcome Back to Familiar Names, pt II; the Almarc Spirit (RIP, issue 46) has resurfaced in the hands of Unix-specialist Uniqix.

Uniqix (02556 79414) has produced a floating-point add-on to boost the power of its range of Spirit micros.

At £3,995 — for the system, software and one year's support — the device is for users who develop software on large minicomputers and are looking for a lower cost system to move it to. Uniqix says in the past this was difficult to do because of lack of floating-point hardware on smaller systems.

In publicity material the Essex-based firm's micros bear Almarc's label. But a Uniqix spokesman said: 'Our machines have nothing to do with Almarc except in 'spirit'. Basically it's the same box, but with a 68000 processor.'

Poundstretcher

Database Publications is rocking the software prices boat. The company has just released 'Mini Office' for the BBC and Electron at £5.95 (tape) or £7.95 (disk).

The package includes word processing, spreadsheet, and a database. While none of the individual modules can hope to rival more expensive products, the suite seems to be good value for money. The package is for the very small (one-person) business or home users wishing to extend the use of their micros in the home, and the company is relying on numbers of sales to pay for the low prices.

The word processor includes a double-size text option in both edit and print mode as well as a time and word count plus a words per minute tally.

The spreadsheet may have a limited capacity of about 99 rows, but handles formulae, can be dumped to a printer and includes a graphics charting feature.

The database would be ideal for storing companies, contacts, phone numbers and so on.

Contact Mike Cowley on 061-456 8383 for more details.

VIEW FROM AMERICA

Dallas sets scene for next chapter

By Chris Rowley

According to research firm Infocorp, market share by dollar value for the US microcomputer market this June was: IBM PC 25 per cent, PC XT 14 per cent (IBM total 39 per cent); Apple IIe 10 per cent, Mac 11 per cent, IIc 7 per cent (Apple total 28 per cent); Compaq 10 per cent; the remaining 23 per cent split by Commodore, Tandy, Kaypro and everybody else. This was the last month before AT&T's entry into the market, something that may change everything.

Figures indicate Apple's developments of the Macintosh and the IIc have kept them in the game. The decline of Tandy, much predicted, continues unabated, as the Fort Worth company struggles with its image and its inbuilt dilemma — is it a micro company with a sideline in electronics stores? The indications are that although TRS micros and software now account for 35 per cent of Tandy's business, the company's future will lie in retailing a mix of electronic goods in the 6,000 stores rather than in micro manufacture.

The figures must have brought home to IBM just how poorly conceived PCjr was in its original form. While Apple's IIc has been carving a market niche the jr has gathered dust on store shelves.

Confirmation of that was provided this week by the closing of Junior magazine, launched with fanfares just six months ago to capitalise on what was expected to be IBM's triumphant advance into the American home.

Of course IBM could always improve jr, and cut prices, and make friends with the micro retailers again. Unlike some enormous corporations that never seem able to profit by learning from their mistakes, IBM has demonstrated flexibility and shrewdness over the years. So having made retailers miserable by loading them up with double orders of unsellable jrs and then by slashing prices and profits on the range of IBM micros by 23 per cent, Big Blue turned round and invited 2,000 retailers and software developers to a three-day third birthday party for the PC, which was held in Dallas a week before the Republican convention (no figures on how many IBM retailers stayed on because they were Republican delegates).

Of course the carefully orchestrated festivities, while unusual for IBM, were the perfect backdrop for the unveiling of the IBM PC AT and the improvements to the jr, starting with the replacement for the horrible chiclets keyboard.

Simply put, the PC AT stunned the industry, primarily because of the $4,000 to $6,000 price tag on a range of machines that will have 512K RAM, two floppies and that 20Mb hard disk. Because the AT uses the 80286 chip it will run about twice as fast as the old PC and the Xenix operating system offers multi-user capabilities for up to three other IBM PCs, XTs or jrs. IBM positioned itself very well for this by buying 15 per cent of Intel and licensing the right to manufacture the 80286. Such vertical production control, after all, is what Jack Tramiel used at Commodore to annihilate opposition. Some analysts saw the new IBM micros as a powerful counterstrike to AT&T's recent launches. Others noted the slot for an LAN card and IBM's announcement of local area network systems that will allow up to 1,000 PCs to exchange information and share printers, etc. Can AT&T really compete?

Meanwhile, in Santa Clara, California, an interesting law suit was initiated by Jack Tramiel. He charged the Amiga Corporation with fraud in the matter of development of three custom VLSI chips originally intended for Atari as part of a $500,000 deal that provided crucial cash for Amiga. Then, just days before Tramiel took over Atari, Amiga cancelled the deal, returned the money, and told Atari the chips didn't work.

However the new Atari Corp believes the chips do work and are going to be the basis of a new computer for Commodore to be released next year.

Irving Gould, Commodore chairman on vacation in Bermuda, declined to comment on the Atari suit, but admits that Commodore is expecting to buy Amiga.

Five-year plan

In the pages of the press machines come and go, but when you buy a micro the chances are you want it to last. Domestic and General Insurance has come up with a scheme to add to your peace of mind.

This isn't the first home micro policy but it's the most extensive cover *PCN* has come across. For owners of Atari and Commodore systems, Domestic and General is offering five-year breakdown cover. This is an extension of four years over the manufacturers' guarantees — if you have a Commodore 64 it will cost £36, and for an Atari 800XL £37.60.

Eric Allen of Domestic and General is keen to stress that this is breakdown cover as opposed to an extended warranty. It excludes modified machines or 'wilful' breakages, but there are no excess payments of the kind you find in car-hire agreements. 'All the user has to do,' he says, 'is send the maker the machine and a passport (a service organisation card) and they will fix it and repair it free of charge — we deal directly with them.'

For both Commodore and Atari, Domestic and General covers the full range, including peripherals — rates vary according to the unit. Full details are available from the company on 01-946 7777. Domestic and General has been going 35 years, and it specialises in breakdown costs.

'As an insurance company we've been able to agree fixed repair costs which can mean a considerable saving,' Mr Allen explained. 'The principle of insurance is that we try to make a small profit (!) but most of our money comes from investment interest between the receipt of the premium and the time we go on risk.'

Insurance consultants reckon that more than half the personal computers in this country are now outside their manufacturers' guarantees. Some companies offer cover as an extension to a home-and-contents policy, some provide 'all risks' cover — breakdown, accidental loss or damage — and some offer extended guarantees. *PCN* examined the subjects in issue 17.

SMALL PHRY — BBC and Electron users can hook up this 40-column printer to their machines. At £113 the PhiPrint comes with a Centronics interface and cables, and can print in true descenders, lower case characters and underline. Other features include bit image graphics and character modes. It is sold by Phi Mag Systems (0326 76040).

Statacom fits Hitachi drives to 48K Spectrum chassis

At the rate disk interfaces are coming out for the Spectrum you'll soon be able to fit a floppy at each corner and call it a Sinclair Electronic Car.

The latest disk supplier off the grid is Statacom Distribution (01-337 0311) with a Datafax interface for Hitachi 3in drives. Statacom says the interface is in production now, and that decent quantities should be in stock by the time of the PCW Show in three weeks.

Under an introductory offer you pay £245 plus VAT for the interface and a drive — 100K of storage, or 200K 'flippable' at the bottom of Hitachi's range. The interface itself costs £79.95 plus VAT.

That buys you the interface with disk operating system, cabling, a manual and a utilities disk. You have to find 8K in your Spectrum but the interface carries its own edge connector, so there should be no problem stacking peripherals.

Datafax has devised a semi-random access filing system, which sets its unit apart from some of the Spectrum disk offerings. The maximum number of files you can store is 39 per side, as long as none exceeds 3K. The interface isn't restricted to Hitachi 3in disks — it also operates with any 40-track 5¼in drive.

Rade takes bus route

By David Guest

A Rade Systems R-50 board could be the next route to CP/M for BBC users — and the first for many Lynx, Amstrad and MSX owners.

The R-50 is primarily a hobbyist's board, with a Z80A running at 4MHz, 64K of memory, CP/M 2.2, an on-board clock, and two bus expansion connectors. It has been about for nine months, but now Rade plans to turn it into the cornerstone of a system-building programme unlike any it has previously attempted.

The board has no video output or drive controller, but Rade's Mick Griffin says: 'We can add a drive controller and power supply and plug it into a BBC.' It's likely to be mid-November before you see it on sale, and the price should be around £345.

Rade is working on Lynx, Amstrad and MSX interfaces; 'all we require is a serial line at the computer end,' says Mr Griffin.

On each of the expansion sockets you can stack half a dozen Rade option boards — controllers, memory expansion, interfaces and so on — and the company aims to tread a different kind of upgrade path by standardising on the serial I/O. The idea is to keep the same peripherals regardless of the micro they are attached to.

The board and controller will be sold through a Rade offshoot, Upgrade Technology (01-451 4414).

The company is working on other products to be marketed the same way: there is a software switchable modem just starting out on the long road to BABT approval, to cost about £95 as an option board or £115 boxed; a word processor with integrated spreadsheet and semi-integrated database for £50; and an integrated accountancy package for £50.

POD HOMILY — By way of Parc Electronics and Cheetah Marketing (01-833 4909) the Interpod has made it back into the shops. This RS232/IEEE interface unit for Commodore users was part of the flotsam when Oxford Computer Systems foundered two months ago, but it was picked up by Parc and is now on sale again at £59.95, about the price we forecast (issue 72).

Three to put your shirt on

Eyes down, look in for the latest software competitions which will test your psychic powers, pertinacity, and penchant for a punch-up.

Organiser	Closing date	Prizes	Details
Golden Ferret (01-805 6853)	—	£2,000	Exercise your psychic powers on Test Your Psibility.
Domark (01-871 1136)	PCW Show	£25,000	Unravel the mysteries and puzzles of *Eureka*.
Comsoft (0532 665621)	Mar 31, 1985	First—£50 Runners-up £20, £10 vouchers	Make the highest score in the arcade game *SAS Commander*.

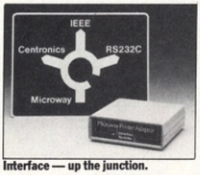
PERIPHERALS

The new releases

Expansion Cards: Add-on cards for the IBM PC are emerging in decks. Microage Distribution's (01-205 7688) Graphics Edge plug-in card comes with a light pen interface and a printer port at £684. The company says the card is compatible with Lotus 1-2-3 and the Microsoft Flight Simulator, and allows you to run graphics software simultaneously on both colour and monochrome monitors. At £247 Magic Card is for the electronic office and has two useful packages at no extra cost — PC-Write is a word processor and Formmanager a filing system. KPG (01-995 3573) has produced a multi-function card, Ideamax 384, with 64K of memory and three interfaces at £318. Pop Ultrapak into your PC and you get a 132 × 44 display and compatibility with several business packages. At £747 Ultrapak is available from MBS (07535 68171).

Storage: Attach a Sanyo disk drive kit to your MBC550 and turn it into an MBC555. At £343 you can have a twin disk machine with three packages: Infostar, Mailmerge and Spellstar. Contact Sanyo (Watford 46363). A range of floppies from US firm Memtek is now available in the UK. Prices range from £4.25 for a twin-pack of single-sided, double-density disks to £31.25 for a pack of ten double-sided, double-density disks. Contact Memtek (Middlesex 47241).

Epson emulation from Thame.



Interface — up the junction.

Adaptor: With an Inmac adaptor you can plug in an IEEE interface device to a RS232 (V24) connector — which means there's no messing about with the connectors on cables. The adaptors are available from Inmac (09285 67551), in two forms — either male/male or female/female for £33 each.

Printers: Commodore users looking for a printer can try three new machines. The MCS 801 is a dot-matrix printer which prints up to seven colours. For £399 it runs at 38 cps, produces graphics, offers tractor feed and takes two copies. At the same price a letter-quality daisywheel printer gives you bi-directional printing at 18 cps from a full range of typefaces. For a no-frills dot-matrix printer the MPS 802, printing at 60 cps and costing £345 may be what you need. DRG's (0934 415398) Ensign 1650 is a dot-matrix printer at £343. It gives 165 cps, friction and tractor feeds and has seven character sets and five modes. Also there's the TEC A10/30 at £792 which has features such as bold and shadow printing modes with underlining; it runs at 30 cps. A couple of fast dot-matrix printers are available from Thame Systems (084-421 5471), the MC2200 and MC4200 at £516 and £642 respectively. If you're having printer compatibility problems, Interface Systems (0424 225683) has come up with a range of printer interface adaptors. With Microway you can opt for the printer of your choice, without tampering with your hardware. The unit costs £89.

IEEE to RS232 — Inmac plugs in.

PCN CHARTS

GAMES

NEW WEEKLY CHART! NEW WEEKLY CHART

		GAME TITLE	PUBLISHER	MACHINE	PRICE
► 1	1	Full Throttle	Micromega	SP	£6.95
► 2	2	Sabre Wulf	Ultimate	SP	£9.95
▲ 3	6	TLL	Vortex	SP	£5.95
▼ 4	3	Match Point	Psion	SP	£7.95
▲ 5	24	Jack & B'Stalk	Thor	SP	£5.95
▲ 6	7	Arabian Nights	Interceptor	C64	£7.00
▲ 7	5	Jet Set Willy	Soft Projects	SP	£5.95
▼ 8	4	Beach-Head	US Gold	C64	£9.95
► 9	9	Lords of Midnight	Beyond	SP	£9.95
▲ 10	13	Potty Pigeon	Gremlin	C64	£7.95
▲ 11	12	Micro Olympics	Database	SP, C64, AC	£6.95
▲ 12	19	Decathlon	Activision	C64	£9.99
▲ 13	17	Valhalla	Legend	SP, C64	£14.95
▲ 14	18	Tank Duel	Real Time	SP	£5.50
▼ 15	11	Mugsy	Melbourne	SP	£6.95
▼ 16	12	Psytron	Beyond	SP	£7.95
▲ 17	22	Rapscallion	BugByte	SP	£6.95
▼ 18	14	Encounter	Novagen	C64, AT	£8.95
▼ 19	16	Loco	Alligata	C64	£7.95
▲ 20	—	Daley's Decathlon	Ocean	SP, C64	£6.90
► 21	21	War of the Worlds	CRL	SP	£5.95
▼ 22	8	Stop the Express	Sinclair	SP, C64	£5.90
▲ 23	15	Trashman	N. Generation/QS	SP, C64	£5.95
▼ 24	20	Fighter Pilot	Digital	SP	£7.95
▲ 25	26	Worse things at Sea	Silver Soft	SP	£5.95
▲ 26	—	Kosmic Kanga	MicroMania	SP	£5.95
▲ 27	29	Frak!	Aardvark	AC	£7.50
▲ 28	—	International Soccer	Commodore	C64	£9.95
▲ 29	—	Son of Blagger	Alligata	C64, AC	£7.95
▲ 30	—	Star Trader	BugByte	SP	£6.95

MICROS

Top Ten over £1,000

TW	LW	MACHINE	PRICE	DISTRIBUTOR
►1	1	IBM PC	£2,390	IBM
►2	2	Apricot	£1,760	ACT
▲3	7	Compaq	£1,960	Compaq
▼4	3	Apple III	£2,755	Apple
►5	5	Televideo TS1603	£2,640	TH
▲6	8	Wang Professional	£3,076	Wang
▼7	4	Sirius	£2,525	ACT
▲8	—	Kaypro	£1,604	Kaypro
►9	9	Philips P2000 c	£1,484	MD,KDS
▲10	—	NCR Decision Mate V	£1,984	NCR

Top Ten up to £1,000

TW	LW	MACHINE	PRICE	DISTRIBUTOR
►1	1	Spectrum	£99	Sinclair
►2	2	Commodore 64	£199	CBM
▲3	5	BBC B	£399	Acorn
►4	4	Vic 20	£140	CBM
▼5	3	Electron	£199	Acorn
▲6	7	Memotech 500	£250	MTX
▲7	—	Amstrad	£229	Amstrad
▲8	9	Oric	£99	Oric
▼9	8	Atari 800XL	£250	Atari
►10	10	Dragon	£150	Dragon

These charts are compiled from both independent and multiple sources across the nation. They reflect what's happening in high streets during the week up to **August 23.** The games chart is updated every week.

Neither mail order nor deposit-only orders are included in these listings. The prices quoted are for the no-frills models and include VAT.

Information for the top-selling micros is culled from retailers and dealers throughout the country and is updated every month.

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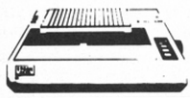

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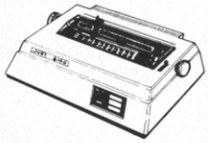

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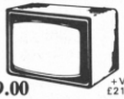

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Ataris are very attractive to some

In 'Ataris to clear' (*PCN* Monitor, issue 74) you stated that the Atari 600XL had 'no fewer than 11 graphics modes'.

Wrong — The 600XL has no fewer than 15 graphics modes, and because of it's unique graphics system, several other modes are also available by simple display list changes.

And all these modes are available with what you call the 'ageing' 400 and 800 models. In fact the 400/800 was the first true home computer you can buy at any price.

Much has been said in the past about the Atari's so called 'poor' Basic. Why does no-one ever say anything about other systems that continue to use ancient and/or obsolete Basic terms:

How about the over-rated PROC and DEFPROC? PROC is just another way of saying GOSUB, and if you use GOSUB you don't need to waste a line with DEFPROC.

Atari's string handling is far superior to that on other machines. LEFT$, MID$ & RIGHT$ are not required in Atari Basic. You can't tell me that MID$(A$,I,J) is any easier to use than A$(I,I+J) — they both return with the same result. And how many machines can you name that can have a string 32767 characters long? The Atari does.

The Atari is a complete home computer system, equipped to handle everything a family asks of it — be it playing games, buiness or serious computing. Please treat it with the respect it deserves.

Ken Ward,
Norwich, Norfolk

Sanyo's offer is universal

I would like to make a comment on the news item 'Dixons goes into Business' (issue 74). This gives the impression that the offer of software with the Sanyo MBC555 is exclusive to Dixons.

In fact this software is bundled with the machine by Sanyo. As an independent retailer, I would like to assure my customers that they will receive the full range of software with any machine they purchase — whether or not they also buy a printer.

Angela Watkiss,
Welwyn, Herts

Thank you for the Genie plug

I was very glad to see Keith Hook's article (issue 74) entitled 'Genie Extra'. You are the first magazine other than the Colour Genie User magazine to take an interest in such a minority machine, as far as I am aware.

But why did it have to be so long after the Genie was launched (1982)? The Genie is a very capable machine but only the National Colour Genie Group stretch the machine to the full. I hope that your article will prompt other magazines to publish programs, etc, and that Keith Hook's isn't the first, or the last, in *PCN*.

A. Smith,
Ulverston, Cumbria

Pocket money doesn't stretch

I hate to bring up the subject of home-copying yet again but I feel that everyone is neglecting one of the most important factors which contributes to piracy.

C Hamilton's letter (issue 73) states: 'People copy software because they don't want to pay for it, not because they can't.' Although this may be true to some extent, I believe that there are those who genuinely cannot afford it. A large proportion of the games buying market consists of children under the age of 15 whose only source of income is pocket-money and to whom £2 is not a small amount of money.

Children are not going to spend what could be a whole week's pocket money on a single game when they can buy a C90 cassette for under a pound and copy their friends' games. This is especially true of games costing about £15.

The only ways to stop this piracy therefore are the dongle method of protection or to make the game so bad that people will not want to copy it.

On the subject of software companies, I feel that some of them are very hypocritical — they copy the ideas behind successful arcade or computer games and then sell them, which is itself piracy. Microdeal for example are on a crusade against piracy yet they sold a game which looks very much like *Pitfall*.

Original ideas are few and far between and as soon as a successful game is developed the software companies produce their own clones. Everybody complains about the number of 'Maniac Miner' copies, forgetting that the original was *Miner 2049er*.

Before the software companies complain how home copying is damaging the industry they should stop their own large scale piracy.

K. Hewson,
Merseyside

Computer books — so much junk

A lot of micro related companies are going under nowadays. You need to be good to survive, and you need good products — unless you are Sinclair Research.

Why is it that in this competitive business 80 per cent or more of computer books are trash. After paying £6-8 for a book you return home to find out it is almost an exact copy of the manual you got with your machine. True, interesting bits are added to disguise the breach of copyright. Like the 50 pages on how to tune in your TV and fit a plug. Fascinating.

Or, if you bought a bargain book of 53½ programs, they are riddled with bugs and wouldn't know a UDG if it hit them in the face.

In this sea of junk literature, however, there is a welcome little island. It's called *PAN/PCN*. I have had several of these large thick books including the Oric and Electron ones. They are the best computer books on the market.

Neil Olner,
Doncaster, South Yorks

Unfortunately we can't take credit for this one; the editorial teams of PCN magazine and PAN/PCN books are independent. —Ed.

Little addition to London program

My program *London* for the Epson HX-20 (issue 74) will stop with 'out of string space' error if you enter lengthy 'from' and 'to' addresses.

This can easily be prevented by inserting in line 140, after WIDTH24,20:, the command CLEAR 400:.

The Tab key should not be used when entering multi-line addresses, or the computer will ignore whatever precedes the tabulation. Use the space bar instead if you want to get to the next line when writing an address.

David Lewis,
London N3

Computer games a waste of time

Your article in *PCN* Monitor 'Survey slams Micro Use' (issue 73) is sure to raise an uproar. However, I am pleased *PCN* are setting forth views.

My own opinion is that computer games are really very infantile. Oh yes, the programs and the graphics may be superb, but so what? Why not just go to an amusement arcade or join a games club?

I have two computers, the Amstrad and TRS-80 Colour, and my great desire is for utilities and data programs of all sorts. My computers cost money and I want my money to work for me as I am old, retired and allergic to work. Also, seriously, will all these games really do our children any good? They will learn all the jargon and be computer literate but will they be able to write a really decent structured program in Basic? I wonder . . .

Rodger Pyatt,
Orpington, Kent

This is how they save the screens

Colin Merry (Routine Inquiries, issue 72) wrote asking how the BEEP we manage to display screens from protected software.

Your readers may be interested to know that while we have occasionally received screen dumps direct from authors or overcome protection devices, the majority of our reviews are made possible by the expedient of rewriting the non-maskable interrupt routine in the Spectrum ROM. EPROM Services of Leeds helped us out by producing the hardware and blowing an EPROM to specifications dictated over the telephone in hexadecimal.

Now we just press a button and the screen is saved to tape.

Roger Swift,
16/48 Magazine,
Chiswick, London W4.

Air your opinions, share your experiences or just point out our occasional blunders. If you have an impressive way with words you may gain £10 for the star letter.

WRITE TO: Random Access, *Personal Computer News*, VNU, Evelyn House, 62 Oxford Street, London W1A 2HG.

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Amstrad printer problem solved here

Q I need to produce listings from my Amstrad but have so far been unable to track down a source of printer cables. I'm also looking for a word processing system.
Boris Southwood, Lancaster.

A Amstrad printer cables for Centronics printers are currently available from Computer Services, 63 Quilp Drive, Chelmsford, Essex CM1 4YD at £14.87 (inc p&p). If you try other sources, such as Lion House, you can expect to pay up to £22.66 (believe it or not), while Amstrad is selling one of its own for £9.95. Contact Amsoft at 169 King's Road, Brentwood, Essex (Tel 0277 230222).

You should be able to cobble together a printer lead for yourself. After all it's just a question of linking a ribbon cable, a 34-pin edge connector (for the Amstrad end) and a Centronics connector: these components are available from many electronics shops such as Tandy. Most of the connectors are of the snap-together variety so you don't even need a soldering iron.

Most of the cables available won't work properly — you'll get double line spacing from them because pin 14 (AUTO FEED XT) is connected. However, with a steady hand, sharp knife and printer manual you should be able to sever this connection to rectify the situation. Then you can play around with DIP switch settings (SW 2-3 on Epson and compatibles like Mannesmann Tally) as well as the Amstrad's WIDTH command which sets the printer line width. WIDTH 255 should stop the Amstrad sending carriage return at the end of a line.

Unfortunately, the Amstrad only sends seven bits to the printer, so you can't use the graphics facilities of printers like the FX80, or Epsons with the Graftrax option. Worse still, this poses major problems for anyone attempting to produce a high-resolution screen dump to any printer.

On the software side, Amsoft is due to release Amsword, and Tasman is producing a version of its favourably received Spectrum word processor Tasword Two. This costs £19.95 and you can order it on 0532 438301. There is also The Typist, originally for the Dragon, but we've not seen it in operation. The Typist is available for £5 from South Molton Computers, 07695 2727.

Filling in the Oric's circles

Q Do I have a bug in my Oric 1? I typed in the following program, which should produce a filled circle, but I got some odd results instead.

```
10 HIRES
20 PRINT CHR$(17):'Cursor off
30 FILL 1,1,155
40 CURSET 120,100,1:'Centre of screen
50 CIRCLE 99,1:'Biggest possible circle
60 FOR N=1 TO 99
70 CIRCLE N,1
80 NEXT
```

J Reed, Westhoughton, Bolton.

A Line 30 of your program is the culprit: it places a value of 155 in the first byte of the HIRES screen. 155 is the attribute code for TEXT 50Hz, and quite why you want this on the HIRES screen is beyond us. Anyway, the screen controller looks at this, thinks 'OK, I'm dealing with a TEXT screen' and updates or refreshes the display on that basis.

The TEXT screen begins at address 48000, but the HIRES screen begins at 40960, so the refreshing is only done from 48000, because the controller thinks it's handling a TEXT screen. Consequently, while the graphics commands are writing to memory between 40960 and 49119, what appears on the screen is the contents of addresses between 48000 and 49119. So, the top part of the graphics screen doesn't appear on the display and explains why you get half-ellipses descending down the screen when the concentric circles are drawn.

FILL 1,1,155 effectively sets up a TEXT window over the bottom part of the graphics memory, which thoroughly confuses the display.

Convert Beeb's 16-bit binary code to hex

Q I am trying to write a machine code monitor for the BBC Micro, but how do I convert a 16-bit binary number, whose address is stored in &70, and &71 to a four digit hex string, stored in the contents of &72 and &73?. Could you also recommend a machine code debugging tool in ROM?
Simon Spruzen, Woburn Sands, Milton Keynes.

A The solution is fairly easy except that you can't get four bytes into two memory locations. A hex string, such as &AF12, can only be stored in four bytes, one for each character. The following program uses two post-indexed indirect loads to get the appropriate numbers from the address held in &70 and &71.

These are then stored in &72 and &73, and then each high and low nibble is converted into an ASCII code and stored in &75, &74, &77, &76 appropriately. If the codes are in the wrong order, simply change the STA locations in lines 150, 180, 210, and 240.

One oddity of the BBC's 6502 assembler is the instruction ROR. To rotate the accumulator, use the mnemonic ROR A but, if the variable A has been assigned to a location or label (same thing), there could well be some confusion since the assembler takes ROR A as rotate the accumulator and not rotate the location specified by A.

The program can be used as demonstrated, but it is also possible to use JSR &FFEE to print out the hex string held in &74 to &77.

One of the best ROM monitors we have come across is the SPY2 ROM from System Software, Dept A 12, Collegiate Crescent, Sheffield.

```
 10 DIM CODE 100
 20 FOR T=0 TO 3 STEP 3
 30 P%=CODE
 40 [OPT T
 50 .GO
 60 LDY #0
 70 LDA (&70),Y
 80 STA &72
 90 INY
100LDA (&70),Y
110STA &73
130 LDA &72
140 JSR LOW
150 STA &77
160  LDA &72
170 JSR HIGH
180 STA &76
190 LDA &73
200 JSR LOW
210 STA &75
220 LDA &73
230 JSR HIGH
240 STA &74
250 RTS
270 .CONVERT
280 CMP #9
290 BMI NUMBER
300 CLC
310 ADC #55
320 RTS
330 .NUMBER
340 CLC
350 ADC #48
360 RTS
370 .LOW
380 AND #15
390 JSR CONVERT
400 RTS
410 .HIGH
420 CLC
430 ROR A:ROR A:ROR A:ROR A
435 AND#15
440 JSR CONVERT
450 RTS
460 ]
470 NEXT
480 ?&4000=&A2
490 ?&4001=&F0
500 ?&70=00
510 ?&71=&40
520 CALL CODE
530 FOR T=&74 TO &77
540 PRINT;CHR$(?T);
550 NEXT
```

Flattening the Oric's circles for ellipses

Q I can work out how to draw circles on my Oric 1, but when it comes to ellipses I'm stumped. Has the formula got something to do with the height to width ratio?
Peter Wylie, Knutsford, Cheshire.

A The formula for an ellipse is virtually the same as for a circle. The only difference is that with an ellipse you must specify two radii — one for the vertical, the other for the horizontal. If these are the same your height:width ratio is one, and you get a circle.

The following subroutine should perform the calculation and do what you want. The variables XC and YC are the x and y coordinates of the centre, XR is the horizontal radius and YR the vertical.

XR/YR gives you the height: width ratio.

```
1000 V=(22/7)/180:REM OR PI/180
1010 FOR D=540 TO 180 STEP
     -10:ED=D*V
1020 XP=XR*SIN (ED):
     YP=YR*COS (ED)
1030 XP=XC+XP:YP=YC+YP
1040 CURSET XP, YP,
     1:NEXT:RETURN
```

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September — WEEK 1
Monday 3rd Noon
Grand Opening — by a tribe of Topo Robots (as seen on TV), supplied by Prism.

Tuesday 4th &
Wednesday 5th
Demonstration of BBC, including Z80 and 6502 second processors — Torch disc pack — Teletext adapter — Digitiser — Gemini Datagem Database and Integrated business software.

Thursday 6th, Friday 7th & Saturday 8th
Demonstration of Memotech MTX, FDX disc drives, Solidisc, the incredible MRX graphics display using hard discs — RS128 — 128k version of MTX.

Throughout the exhibitions there will be a continuous display of Microvitec colour monitors — for Sinclair QL — Spectrum — BBC.

Spend £10 or more and gain the chance to

Win a Sinclair QL

Draw and presentation on Saturday 29th Sept.

Special offers — available throughout the festival:

BBC 100K disc drives	**£99.95 inc. vat**
BBC 400K D/S drives	**£169.00**
Spectrum 48K £50 software	**£127.95**
Prism BBC and Spectrum modem	**Special reductions**
Memotech RS128 (RS232 128K)	**£399.00**
Smith Corona TP1 d/wheel — serial	**£199.95**
80 Col Dotmatrix — 80cps	**£199.95**
Fuller FDS keyboard	**£44.95**

AND MUCH MUCH MORE NEXT WEEK

First, a question.

Who do you think are the world's most avid consumers of microcomputers?

The ingenious Japanese? The fashionable French? The acquisitive Americans?

Believe it or not, it's we British who own more micros per person than any other nation on earth.

Yet, despite its amazing impact, the microcomputer has only just begun to scratch at the surface of our lives. Without doubt, the best is yet to come.

Use and Abuse.

In several recent surveys, some astonishing facts about micro use and abuse were revealed.

It was discovered that the micro is hopelessly under-utilised. If you're already a micro owner, your own experience may well confirm this unhappy state of affairs.

Brainpower. A source of knowledge.

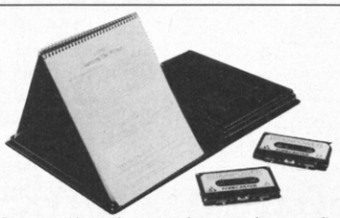
For thousands of years, the key to self improvement has been in the hands of the written word. Now, thanks to the Brainpower range, it's very much in the hands of the micro.

As the Brainpower range demonstrates, this does not require prior knowledge of micros, or how they work.

The Brainpower concept has been devised as *integrated* applications and educational software. And its aim is to stretch both your mind and your imagination.

It offers a unique way to realise your own full potential and that of your micro. In a way you could never hope to achieve from the printed word alone.

In this respect, the Brainpower range stands on its own.

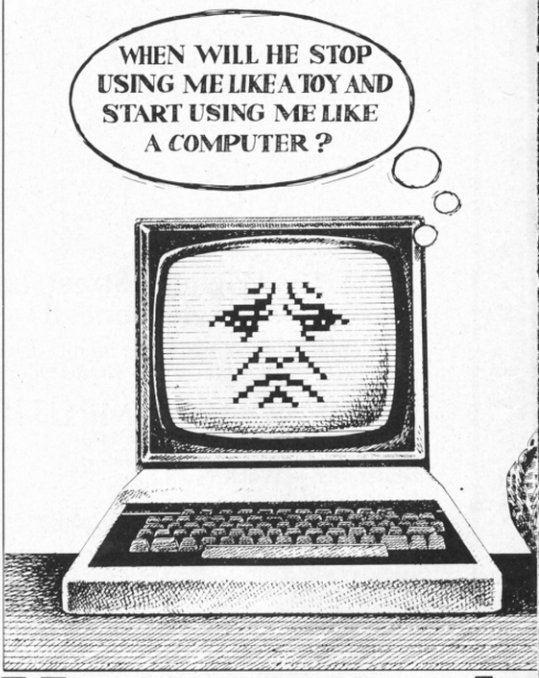


Each Brainpower title provides a unique three part package: an applications program; a teaching program and an illustrated manual and interactive tutorial – integrated applications and educational software.

A unique concept.

All the Brainpower titles share one thing in common, apart from their stimulating subject matter, that makes them unique.

You will find each title comprises three distinctive elements: A teaching program that helps you to get to grips



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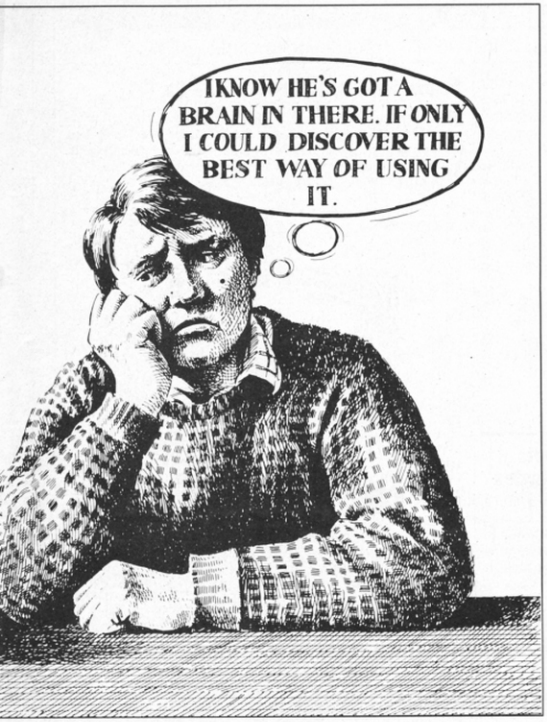


your micro can test in each other.

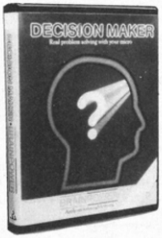
with the subject at your own pace. An applications program to put what you learn into action. And finally, with each package, you get an expertly written book and interactive tutorial.

STAR WATCHER

The secrets of the heavens are yours. Isolate all the constellations as well as main stars for easy identification. Even turn stars and constellations on and off at will. Screen by screen, you will see exactly how the 1,500 brightest stars move through time and space. And all from any point on the Earth's surface at any time of the year.

Star Watcher is without doubt the definitive home observatory.

DECISION MAKER



Should you buy a new house? Change jobs? Have children? Start your own business? Such decisions should not be taken lightly. Armed with Decision Maker, you can be quite sure of examining every avenue, and arriving at a rational, structured answer.

If you value the way you run your life, you need Decision Maker.

NUMBERS AT WORK

Tackle all the number problems you're likely to face in daily and business life. From straightforward multiplication and division of fractions, through decimals, percentages, ratios, mark-ups and margins to compound interest, depreciation, VAT and PAYE.

Numbers at Work gives you a distinct edge, since you will be able to both understand and manipulate numbers at will.

PROJECT PLANNER

Project Planner teaches you how to divide even the most complex project down into meaningful components. Learn how to determine the length and importance of every single task, and those elements critical to the fulfilment of your plan. Even anticipate problems you hadn't envisaged.

You have the measure of any situation because you have the fullest possible grasp of all the factors which affect it.

FORECASTER

Forecaster takes the guesswork out of forecasting, by accepting that tomorrow's events will be best predicted on the basis of today's facts. Armed with Forecaster, sales targets and growth trends, even sporting events and election results can be accurately and very quickly predicted.

Invaluable to you in both your private and business life.

ENTREPRENEUR

Entrepreneur teaches you all the steps required to plan and start your own business. It will forecast your first 18 months' cash flows, generate your Profit and Loss Account and Balance Sheet. Help you in discussions with your bank manager and partners. Explain the notions of assets, liabilities, overheads, working capital, cash flow and break even point.

Invaluable to anyone who is planning a business venture.

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Numbers at Work		N/A	N/A		
Star Watcher		N/A	N/A	N/A	N/A
Entrepreneur		N/A	N/A		
Project Planner	N/A				
Forecaster	N/A				

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BRAINPOWER

More hints and tips from our readers to make programming a little easier.

You all know the feeling: after hours, days or even weeks spent on a particular problem you suddenly see the answer. Or on one of those late-night expeditions through the memory map you find some undiscovered feature. Well don't keep it to yourself — send it here. We pay £5 for every tip and routine printed and £25 for a genuine Megawave.

Send your contributions to: ***Microwaves, PCN, 62 Oxford Street, London W1A 2HG.***

There is hope yet for BBC bad programs

The following program, for the BBC, will retrieve programs that have had loading problems and so have finished with 'bad program'.

First, set the page to about 30000 as soon as 'bad program' appears, then type NEW followed by the program below.

Note that it will only retrieve Basic programs and it does depend on what is causing the 'bad program' error message. As soon as the program displays its message, put PAGE back to &E00, type OLD and LIST or RUN.

M A Formosa,
Cheltenham, Glos.

```
>
   10 LK%=&400
   20 REPEAT
   30 LK%=LK%+1
   40 UNTIL (?LK%<&1
F AND ?(LK%-1)<>13 A
ND ?LK%<>13 AND ?(LK
%-2)<>13)
   50 REPEAT
   60 LK%=LK%-1
   70 UNTIL ?LK%=13
   80 ?(LK%+1)=255
   90 PRINT"RETRIEVE
D"
```

Lost Z80 machine code found again

The tip for finding where your machine code is located (Microwaves, issue 73) will fail if it is interrupted between the two DEC SPs. To correct it you just prepare the stack pointer before the CALL.

```
LD, HL,— 2
ADD HL,SP
CALL RET; call any RET
LD SP,HL
POP HL ;address of LD SP,HL to
HL
```

If interrupts are enabled and there is no hurry the CALL RET can be replaced by HALT, thus making the routine independent of ROM.

● If your machine code is called from Basic its address will almost certainly be in one of the registers. On the Spectrum it will be in BC.

● The Spectrum has the following routine at 1FC6H:

```
POP HL
RET Z
JP (HL)
```

CALL 1FCH6H, with z reset, will return the address of your next instruction in HL.

Rosemary Oakeshott,
Romsey, Hants.

Amstrad snippets — hints and niggles

I have found that I keep hitting the Escape key on the Amstrad keyboard when I really want to enter '1', both when entering line numbers and when making numerical inputs. This can be avoided by entering:

```
KEY DEF 66,1,0
```

The unshifted Escape key will not now cause a Break, but still has it's normal function with either Ctrl or Shift.

I found the Amstrad manual rather unhelpful regarding the function keys. The codes for the numeric keypad are given but where are the expansion codes 141 to 159? It appears they are not actually anywhere but must be assigned to the desired keys. For example.

```
KEY DEF 71,1,122,90,150
KEY 150, 'TEST MESSAGE'
```

Entering the above will result in the 'Z' key having its normal functions when unshifted and with Shift or Caps Lock, but when used with Ctrl it will give TEST MESSAGE, or whatever else you assign to the key code.

On the subject of the function keys, a maximum of 120 characters for all of them is not much, but it can be increased to a couple of thousand, with a slight reduction in the ease of use.

To use the '1' key on the numeric pad as an example:

```
KEY 129, 'K1$' + CHR$(13)
LET K1$='any string up to 255
characters maximum'
```

Type in and enter the above, and then type in PRINT and press the '1' key on the numeric pad.

Displaying the QL's colour palette

This program, Palette, prints numbered bars of colour on the screen giving a complete list of all the available QL colours. As it was written for a TV rather than a monitor, the colours crawl a bit, but there's still a remarkable variety available.

John Jarratt, Welwyn Garden City, Herts.

```
10 REMark  **** PALETTE ****
20 REMark
30 REMark  by J Jarratt, 1984.
40 REMark
50 BORDER 2,7:PAPER 7
60 CLS #0:CLS #1
70 REMark  The display unit
80    show 1,9,8
90    show 10,76,7
100    tell 1
110   show 77,99,7
120   show 100,148,6
130    tell 1
140   show 149,224,6
150    tell 1
160   show 225,255,6
170    tell 2
180 STOP
190 DEFine PROCedure show (first,last,across)
200    FOR x=first TO last:PAPER x:
       PRINT FILL$(" ",across);:PRINT x;
210 END DEFine show
220 DEFine PROCedure tell (choice)
230    OPEN #4,scr_250x16a30x230
240    PAPER #4,0:CLS #4
250       SELect ON choice
260       =1
270        PRINT #4,"ANY KEY TO CONTINUE"
280       =2
290        PRINT #4,"THAT'S ALL!"
300       END SELect
310    PAUSE
320    CLS #4 : CLOSE #4
330 END DEFine tell
```

The string assigned to K1$ is printed onto the screen, and can then be utilised as a direct command line, or placed in a program line, by using the copy cursor.

This is not quite as convenient as the normal method, but each function key only has to hold 4 characters (using K1$, K2$, etc.), so up to 30 keys could be programmed with strings of length 255, giving 7.5K of user functions.

Bill Robert,
Pencoed, Mid Glamorgan

Array amendments on the Memotech

It's sometimes necessary to examine or change an array of variables when a program is already running and contains data in the form of variables. One method is to temporarily add lines to the program. Thus, to increase all items in A(N) with a value of more than 35 by 1 type:

```
9000 FOR N=1 TO 40
010  IF A(N)>35 THEN LET
  A(N)=A(N)+1
9020 NEXT
```

Unfortunately the Memotech MTX 512, like most other machines, does not allow addition of program lines without automatically clearing all variables. A direct command does not have this unfortunate consequence. However, even with multi-statement lines, you cannot enter:

```
FOR N=1 TO 40: IF A(N)>35 THEN
LET A(N) =A(N)+1:NEXT
```

as a single command and expect it to work, any more than as a single program line — for if the condition is false, the NEXT is ignored.

However, Boolean algebra provides a solution, −1 being the value the Memotech uses for "TRUE", and typing:

```
FOR N=1 TO 40: IF A(N)>35 THEN
   LET A(N) =(A(N)+):NEXT
```

achieves the desired result, as a direct command.

R W Sharples,
Mill Hill, London NW7.

More books on getting the best out of your micro. Our reviewers tell you if the claim is justified.

'Computer Wimp' by John Bear, published by Hutchinson at £6.95 (paperback, 280 pages).

These are dark days for the computer illiterate — those who feel life is passing them by because they feel unable to buy a computer, those who blanch in the face of a storm of technobabble, those who reach for a sledgehammer when the words RAM and baud crop up in polite company.

Now help is at hand. *Computer Wimp* — subtitled *166 Things I Wish I had Known Before I Bought my First Computer* — contains a great deal of comfort for the Wimp. Wimpishness takes on a heroic nature, a sort of red badge of cowardice. However, there is a great deal contained within its covers that will delight, provoke, teach and outrage the rest of us, from the 'normal' enthusiast to the downright weird, plugged-in junky.

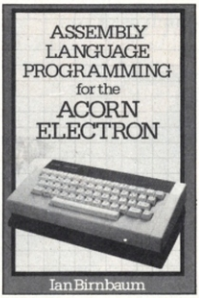
Mr Bear is the perfect guide to the new technology — a true gadget freak whose steely enthusiasm has been forged in the proverbial white heat. He has lived, worked and wept with everything from a DEC mini to a Tandy desktop machine, wrestled with Apple plug-in cards and sweated blood over printer interfaces.

The text is accompanied by countless funny illustrations, and witty, clever or simply pertinent quotes from technowatchers down the ages. Like this one from an IBM spokesman in 1946: 'Our machines are so complicated, the human element doesn't enter into them.'

Under chapter titles like 'The emperor's new computer . . .', 'Never buy anything you can't lift' and 'What to do when they start technobabbling . . .', Mr Bear considers every aspect of thinking about buying, after buying, using and not using computers. And about programming ('Stand up for your right not to be a programmer'), the jargon ('baud rhymes with fraud, stands for Big Al's Universal Delivery, or possibly something else') and what to do when things go wrong (heard the one about the accounts program that deleted the figure 7 at random from data files?).

All in all *Computer Wimp* is a splendid book. If you're a satisfied, dissatisfied or potential computer masochist, it lets you know what's in store. And when things go wrong, there's Mr Bear's Computer Consumer Karate guide.

This may be the funniest, most entertaining and most useful guide to computers ever. **PW**



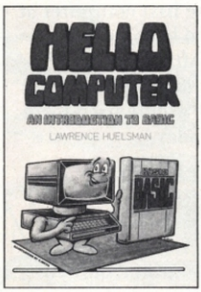
'Assembly Language Programming for the Acorn Electron' by Ian Birnbaum, published by Macmillan press at £7.95 (paperback, 305 pages).

One of the nicer bits the Electron inherited from the BBC is its built-in assembler. But differences between the two machines are fairly minimal, so most assembly books for the BBC apply to the Electron anyway. Mr Birnbaum's book is no exception; it essentially boils down to a description of the 6502 microprocessor's operation including the addressing modes and their capabilities.

On the plus side, the book does contain some useful routines. They include multiplication and division, a high-resolution dump, a machine code monitor, some ideas on floating point representation, and a memory search routine. The book also contains in-depth information on the more obscure addressing modes and interrupts (Events).

Appendix 1 is an oddity with its descriptions of the assembly mnemonics. These appear to have been handwritten. If you have the Electron user guide, this appendix is rather redundant anyway.

The best book on Electron assembly language programming has a lot of programs. The best way to learn assembler programming is to do it, not read about it. **KG**



'Hello Computer: an Introduction to Basic' by Lawrence Huelsman, published by Prentice Hall at £11.65 (paperback, 154 pages).

If you have just bought a computer and want to learn how to program it, you'll want a book of this type.

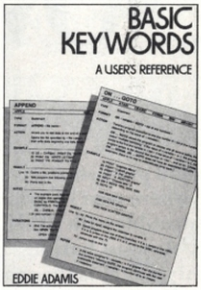
The style is the usual chatty American, and introduces itself with: 'This book is for you!' It continues in the same vein with many cartoons of grinning computers.

The instructions are rather old-fashioned and reminiscent of the books I leaned programming from (on a TRS-80 II).

Predictably, it starts with the PRINT statement. Later arrays, single and double dimensioned, are covered and explained in the usual way of boxes and pigeon holes.

Other subjects covered are subroutines, functions and INPUT. The appendicies contain a description of the Basic, a glossary of computer terms and a section on the differences between the various dialects of Basic. The latter is quite important since most machines vary in the details of implementation.

Most computers, nowadays, come with a manual that contains a complete description of the Basic. They also usually contain an introduction to using this language. If your computer has a good manual, this book is probably redundant. Even if the manual is not very good, the £11.65 price-tag makes it rather over-priced. **KG**



'Basic Keywords — A User's Reference' by Eddie Adamis, published by Wiley Press at £12.25 (paperback, 292 pages).

Although this book is described as Basic terminology at your fingertips, it is unlikely to be a great deal of use to anybody.

Each Basic keyword is given a page of its own, along with a note of the machines with which that word can be used. Next the type, format and action of the word are briefly described, and a short example is given, along with the results of these.

The net result is that although the book seems to be a Jack of all trades, it is master of none.

Also, because each machine's implementation of Basic has its idiosyncrasies, it is necessary to comment on these, and to explain how the keyword works, not just in general (as here) but specifically too.

Although the book covers several machines, notable omissions are the Spectrum and BBC — even though many keywords will be the same, there is little point in having a guide which is not comprehensive.

Perhaps the only real use for this book is that it can be used to help you translate programs from one machine to another. Since Apples, IBMs, Commodores, Ataris and Texas machines are covered, some help can be gained from this book during program conversions.

But even here the book is only going to provide limited help. Program conversions often rely on the way that the memory of a particular machine is used, and on the way that graphics and sound commands can be translated. This book details only the words themselves and says little about the way in which they are used. **PL**

Now, the BBC

The BBC Micro has now taken a giant step into the world of business computing.

With the addition of its new Z80 second processor, it is the first computer at anywhere near its price to become fully compatible with CP/M software.

As most business computer users can verify, CP/M is the most widely used form of software in business today.

For £299, you're well and truly in business.

At £299, the Z80 adds 64K of usable RAM to the BBC Micro. And it allows you to use the CP/M 2.2 computer operating system.

It's extremely fast.

And besides giving you access to a vast new area of software, it enables you to use GSX graphics-based programs, the perfect complement to the BBC Micro's own superb graphics.

Free software and languages.

The Z80 second processor comes complete with five CP/M business programs.

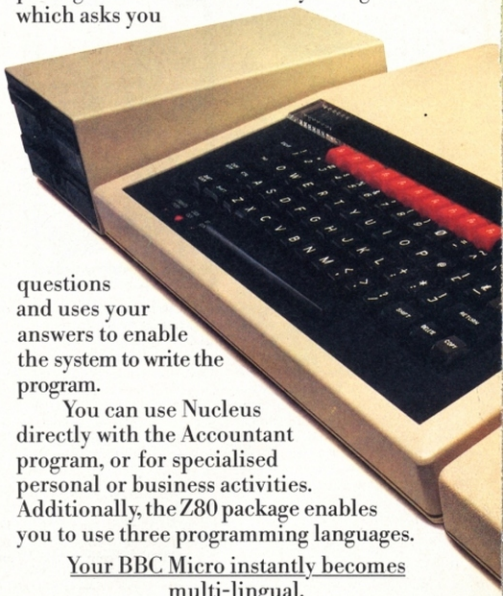
To handle your word processing, there's MemoPlan. It's a program with some highly sophisticated features, such as a safeguard against data loss through power cuts and the ability to show two documents simultaneously on the screen.

To form your CP/M personal database, there's FilePlan. It stores names, addresses, telephone numbers, stock listings and more. And if you use it with MemoPlan, you can generate personalised letters, labels and mail shots.

To produce forecasts and analyse groups of figures diagramatically, simply use the GraphPlan program. This is incredibly helpful in working out vital business calculations, converting them into graphs and charts.

Meanwhile, in the book-keeping department, there's the Accountant program. Use it to enter day-to-day transactions into the computer. Then, at any time, you can ask the computer to produce lists, summaries, reports, audit trails and trial balances. You can readily expand this package to a fully ledger based system, complete with payroll and more.

Finally, to help you to develop your own programs without having specialised experience, the Z80 comes with another software package called Nucleus. It's a system generator which asks you questions and uses your answers to enable the system to write the program.



You can use Nucleus directly with the Accountant program, or for specialised personal or business activities. Additionally, the Z80 package enables you to use three programming languages.

Your BBC Micro instantly becomes multi-lingual.

To simplify writing your own software with the Z80, there's BBC BASIC.

For running professionally written business programs, there's Professional BASIC.

And then there's CIS COBOL, the leading microcomputer version of COBOL, the language used in mainframe computer applications throughout commerce and industry.

With CIS COBOL, the Z80 also gives you two sophisticated programming aids.

CP/M is a registered trademark of Digital Research Inc.

Macro.

One is Animator, an award winning debugging tool which enables you to identify programming errors quickly and easily.

The other is FORMS 2, which helps you to write your own interactive programs in COBOL.

With all these sophisticated features, the Z80 package is exceptional value for money. Indeed, bought separately the programs and languages could cost as much as £3,000.

<u>See the Z80 at work.</u>

The Z80 second processor is designed to be used with the BBC Micro Model B incorporating a Series 1.2 Machine Operating System and linked to a dual 80-track disc drive, a printer and monitor.

Ask your BBC Micro dealer to show you just how far it can go in the world of serious business computing.

For your nearest dealer, ring 01-200 0200.

<u>Technical specification.</u>

The Z80 has a 64K Random Access Memory, running CP/M 2.2 which provides approximately 55K bytes of RAM for user programs.

It operates at a clock rate of 6MHz.

Power supply is integral. Height, 70mm. Width, 210mm. Depth, 350mm.

The BBC Microcomputer System.

Designed, produced and distributed by Acorn Computers Limited.

Bob Chappell surveys the scene to evaluate the influence of a new crop of innovative adventures.

Adventures capital

Melbourne House's *The Hobbit* and Legend's *Valhalla* were both important watersheds in the development of the adventure, but how much has the adventure moved on since their launch?

Like them or not, these two games set new standards in two fields, most obviously in graphics, but also in popularising semi-intelligent characters (in addition to the one usually found sitting at the keyboard).

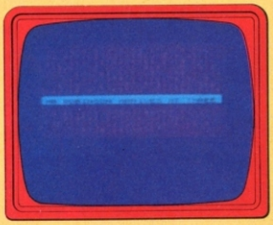
So, post Hobbit and Valhalla, you might have expected the floodgates to open for a new breed of adventures. A look at a representative sample of some of the latest releases should give us an indication of the state of this particular art.

Fantasia Diamond

This one is Hewson's follow-up to *Quest*. The plot is hardly original, being littered with stolen treasure, elves, castles and the like, but there's no doubt that *Fantasia Diamond* is one of the most sophisticated of the current wave.

It shows clear signs of the influence the Hobbit has had on the genre. The command analyser is powerful, allowing the player to enter compound commands such as 'OPEN THE DOOR AND GO EAST', 'GET THE FOOD AND THE WINE' or 'LOOK THROUGH THE WOODEN DOOR'. You can also communicate with the various characters in the adventure with the syntax 'SAY TO THE GNOME "GET THE ROD" '. The characters themselves lead separate lives, and will go about their business as you go about yours.

Many of the locations also include simple graphics, and if you know the Hobbit, they will seem fairly familiar. Hewson has obviously taken the lessons of the Hobbit to heart by combining a powerful command parser, character communication, independent characters, graphics and a large scale mission. The end result is a fantasy adventure that is both sophisticated and stimulating, and offers a great challenge.



Waxworks

Fresh from the fertile mind of Brian Howarth comes yet another in the popular Mysterious Adventure series. Originally these adventures were text only, but they've been updated, in keeping with the trend towards graphically depicted locations.

One excellent feature of this particular series — apart from the fact that it is available for a wide range of micros — is that you can switch the graphics on or off at any time during the adventure.

Waxworks follows a theme beloved of devotees of spook stories. You've been visiting a waxworks museum and you've fallen asleep — in this respect it's a bit like visiting the House of Lords — and you wake up to find you've been locked in for the night.

The adventure breaks no new ground in terms of technical development — apart from the graphics it's a traditional verb/noun command driven game — but, nevertheless, like its predecessors it's a thoroughly enjoyable and entertaining adventure.

Genesis II

Since the days of Noah, 'ark' has generally been what passes for intelligent conversation among ravens. But no more: Mikro-Gen's *Genesis II* is the biblical tale of survival on board a galactic Noah's ark.

It has a good analyser, instant response and graphics, and a vocabulary of some 300 words. There are over 100 locations to explore, and 60 objects to play around with — more than enough to satisfy the most inquisitive and acquisitive of explorers.

What next, one asks? Exodus II, where the children of Israel pass through a black hole into the promised galaxy? The sky quite clearly isn't the limit . . .

The Inferno

Moving right along, we fall like Lucifer into — with apologies to Richard Shepherd Software — the pits. This latest from the

Shepherd stable also exhibits signs of progress. It has a command analyser which allows the entry of compound commands, communication and interaction with the characters, and has graphics which can be switched on or off.

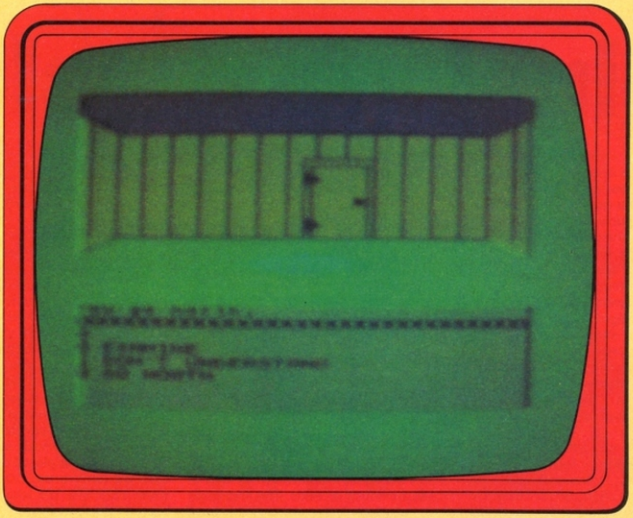
The plot is unusual, being modelled around a plan of Dante's vision of Hell, with the adventurer having to pass through nine circles of Hell to reach the centre and escape. The theme is unusual, and overall it's an attractively presented adventure.

Spoof

Program generators are just starting to have an effect on the market, and Gilsoft's *Quill* is certainly the most popular of them. Since its appearance the Quill has been used to produce a goodly number of commercial adventures for the Spectrum. With its release on the Commodore 64, we can expect to see a similar outpouring of adventures for that machine.

Spoof is a Quill-generated adventure, but what makes it worth special attention is its humour. There are already of a number of humorous adventures to be had, the most notable being *Supersoft's Streets of London* (Commodore 64), Salamander's similar *Cricklewood Incident* (Dragon) and Infocom's superb *Planetfall* (various micros).

But Spoof stands out from these because



it is a parody of the standard adventure. In it you will come across such exotic locations as the Obligatory Mountains, the Secret Mysterious Hidden Cavern (clearly signposted) and the Necessary Forest. You will also encounter a three-headed vulture who wants a bit more than the usual food to let you pass. If you happen to have on you a bottle of wart remover, the dress of a princess, a magic rope and the ring from a pig's nose, you're in business.

Africa Gardens

This is one of Gilsoft's own *Quill*-produced adventures, marketed under the title of *The Gold Collection*. It's a particularly good example of the series, and is set in a mysterious hotel. It's reasonably detailed and its atmospheric text descriptions ensure the player's imagination is caught.

Mindbender

The Gold Collection's contribution to mind-bending is named, aptly enough, *Mindbender*. It's crammed with testing puzzles and action, and starts as it means to go on by forcing you to stretch your imagination if you want to progress beyond the first couple of locations. A good sense of humour in the text helps keep you from biting the carpet when you're stuck—great stuff.

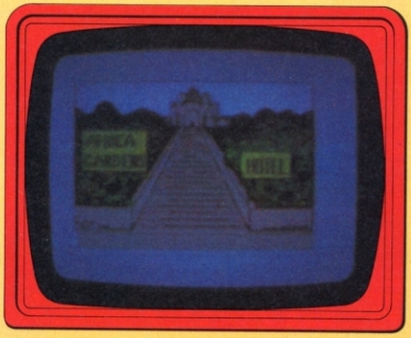
What's next?

Certainly adventures have improved in the long term, but as yet it doesn't seem that there have been any material developments since the Hobbit and Valhalla. The standard of these two is, however, being matched regularly.

And as if Movisoft (the graphics system used by Valhalla) wasn't enough, Legend is currently working on Movisoft 2 for the follow-up, to be called *The Great Space Race*, and due for release later in the year. The next great leap forward? We'll see . . .

PCN

Africa Gardens, Mindbender (Spectrum), £5.95 from Gilsoft, Glamorgan (0446) 732765.
Waxworks (Commodore 64 and others), £9.95 from Channel 8, Preston (0772) 53057.
Fantasia Diamond (Spectrum), £8.95 from Hewson Consultants, 56B Milton Trading Estate, Milton, Abingdon, Oxon OX144RX.
The Inferno (Spectrum), £6.50 from Richard Shepherd, Slough (06286) 67148.
Genesis II (Spectrum), £6.95 from Mikro-Gen, Bracknell (0344) 427317.
Spoof (Spectrum), £6.95 from Runesoft, Nottingham (0602) 287667.



Hang onto your BBC's variables and avoid disaster with Ian Copestake's routine.

Valuable variables

If you've ever accidentally hit break while running a Basic program on your BBC you'll know the anguish losing all your variables can cause. If the program has only a few important variables this is, at the least, merely frustrating. But if you're storing a lot of data, such as games scores or school marks, that's the sort of disaster you could well do without.

The routine presented here gets round the pain by storing the variables so that they can restart automatically, and all intact, when you press break.

It's just as effective if control-break is pressed, and shift-break is also safe so long as there is no !BOOT file on line. It could alternatively be used for program protection as well.

The method uses some unofficial addresses in the BBC's Basic workspace where no operating systems calls will do the job. However, the addresses used have not changed so far since the BBC micro was launched.

When break is pressed the computer won't wipe clean all its memory unless you have used *FX200. The program and its variables are still present, but a few pointers are reset so that the computer ignores them.

You probably know that you can recover a program to some extent by including in it the command:

*KEY10OLD/MRUN/M

But this will not restore the variables, nor will it survive control-break. We cannot make use of function keys at all for present purposes, since control-break resets the buffer where their definitions are kept too effectively.

Basic keeps track of its variables in a 120-byte table starting at &0482. The first pair of bytes point to the first variable starting with A, the next pair to the first variable starting with B, and so on. After Z, a gap of 12 bytes is followed by the pointers to variables starting with A to Z. The gap corresponds to the one between Z and A in the table of ASCII codes. Finally, there are pointers to the first function and the first procedure. Another pointer kept at &0002,3 holds the address where the next new variable should be stored.

A few pointers

These pointers are reset when break is pressed, but if we can manage to copy them to somewhere safe first and copy them back afterwards we will have solved the problem. Basic will then be able to find the variables it would normally think had vanished.

Fortunately, there is a break intercept facility in the operating system. As part of its normal break procedure the computer looks at a particular memory location to see if it contains the value &4c, which is the 6502 machine code for an absolute jump. If it finds one, it jumps to the address contained in the next two bytes. We can put a machine code routine of our own at this address.

The memory location is checked twice at different stages of the break procedure. The carry flag is 0 on the first visit, and 1 on the second, so that our routine can take a different action each time.

We can use *FX247,76 to put the code in the right place, and *FX248,LO and *FX249,HI will put the low and high bytes of our routine's address in the next two locations.

Reserved RAM

The first time it's called, our routine copies the variable pointers to an area of RAM previously set aside. This area could have been reserved in various ways, but I have chosen to use a byte array and let Basic worry about where to put it. The only disadvantage of this is that it pinches about half a page of your RAM; your program could also use the array for things that do not need to be preserved during break.

Although we needn't know where the byte array is planted the routine must. I have attached it to the resident variable Z%. The resident variables are not destroyed by break, and are always stored in the same place. They occupy four bytes each with @% at &0400, A% at &0404, and Z% at &0468. &0468,9 will always contain the address where our byte array starts; we can ignore the next two bytes because it is only a 16-bit address.

After copying the variable pointers into the byte array our routine returns control to the normal break routine and waits to be called again. When this happens we want to arrange for the variable pointers to be copied back. We cannot do that until after we have executed OLD, otherwise they would all be reset again. To perform OLD in the middle of a machine code routine, we could delve into the Basic ROM to see where Acorn has put the OLD routine and then call it as a subroutine. But this would be far too naughty, even if we could be certain we had found the right address.

What we can best do is use OSBYTE &8A (the equivalent of *FX138) to insert some instructions from machine code into the keyboard buffer.

The instructions, in Basic, will be acted upon as soon as the break routine has finished, just as if they had been typed at the keyboard.

So the second time our break intercept routine is called it puts the following three commands into keyboard buffer:

OLD *return*
CALL &*address return*
GOTO *line number return*

It then returns control to the normal break routine.

You should use the run-time address of the machine code to copy the variable pointers back to their original positions: that is, the code from .START2 onwards in Listing 1. I have tacked it onto the end of the break intercept code, but you could assemble it separately if required.

The line number is the line at which your program will restart after break has been pressed. Anything in your program which need not or must not be repeated, such as a DIM statement, should be at an earlier line number. Function key definitions, which cannot be preserved against control-break, should be placed after the restart line. We have to use GOTO rather than RUN, otherwise the whole point of the exercise would be lost.

We can save a few bytes in our code by using Basic tokens. Here &D6 represents CALL all by itself, and &E5 stands for GOTO. When you run the example program the bytes will appear on the screen as ordinary characters, but the Basic interpreter treats them as keywords. For some reason this dodge will not work with OLD, so I have used the ASCII codes for 0., which saves a whole byte.

Now let's move on to operating the program. Type in listing 1. Don't worry about the blank lines, they're just for clarity. There should be no need to change any addresses if you are using MODE 7. Then save the program for future use. When you run the program, if all is well the machine code will be assembled without error and the message OFFSET = &72 will appear.

If this doesn't happen, check your listing carefully.

Check the start and finish addresses of your machine code. These are printed out as it is assembled, and on a normal BBC micro should be &7B00 and &7B86. Add 1 to the finish address and execute:

*SAVE VARPRES 7B00 7B87

Type in the example program in listing 2 and save a copy in case of errors. Have your cassette or disk ready so that VARPRES can be loaded, and then run the example program. Finally, you'll have to convince yourself that it works.

A matter of Source

As for modifying the addresses, the machine code generated by Source is relocatable: you can assemble it at one address and use it at another. To alter the assembly address, assign your own value to ASSADR at line 40 of Source. Use the

appropriate addresses when you *SAVE the code.

VARPRES uses two consecutive bytes in zero page. These can be anywhere not used by Basic, but must be in zero page. To change them, give your own value to ZPGADR at line 50 of Source.

In the example program, VARPRES is loaded at &7B00. In your own program you can load it to any address which will never be overwritten, but a few changes are necessary. Obviously, change the *LOAD address (example line 60). Then change *FX248 and *FX249 to refer to the low and high bytes of your *LOAD address (example lines 90,100).

Alter the data at Source line 450, and reassemble the VARPRES code. The four data items represent the run-time address of the code from START2 onwards, which is equal to your *LOAD address plus the OFFSET value printed at the end of assembly. You can do a dummy assembly to check OFFSET, but it should still be &72.

Get the computer to print the run-time address in hex; add a leading zero if necessary to make it four digits; look up the ASCII codes for these four digits, and put them in the data statement. The DATA statement can be in decimal if you prefer, but it must represent a hexadecimal address.

The example program is re-entered at line 500 after break. To change this, place your equivalent of the example lines 60-120 before your re-entry line. Then change the data at Source line 480 to represent the ASCII codes for the decimal digits of your line number, and re-assemble the VARPRES code.

As it stands, Source caters only for a three-digit line number: use leading zeros if yours is less than this. PCN

Listing 1

```
 0 REM LISTING 1: "SOURCE"
 10 REM By IAN COPESTAKE. 84JL05
 20 REM For £ read Hash (shifted 3)
 30
 40 ASSADR=HIMEM-&100
 50 ZPGADR=&0070
 60 RESVAR=&046B
 70 VARPNT=&0482
 80 VARTOP=&0002
 90 OSBYTE=&FFF4
100
110 FOR PASS=0 TO 3 STEP 3
120   P%=ASSADR
130   [OPT PASS
140
150   BCS SECOND
160
170   LDA RESVAR
180   STA ZPGADR
190   LDA RESVAR+1
200   STA ZPGADR+1
210
220   LDY £119
230   .LOOP1
240   LDA VARPNT,Y
250   STA (ZPGADR),Y
260   DEY
270   BPL LOOP1
280
290   LDY £120
300   LDA VARTOP
310   STA (ZPGADR),Y
320   INY
330   LDA VARTOP+1
340   STA (ZPGADR),Y
350
360   RTS
370
380   .SECOND
390
400   LDA £&8A
410   LDX £0
420   J
430   DATA &4F,&2E,&0D
440   DATA &D6,&26
450   DATA &37,&42,&37,&32
460   DATA &0D
470   DATA &E5
480   DATA &35,&30,&30
490   DATA &0D
500   RESTORE
510   FOR CHAR=1 TO 15
520     ?P%=&A0
530     READ P%?1
540     P%=P%+2
550     [OPT PASS
560     JSR OSBYTE
570     ]
580     NEXT CHAR
590
600   [OPT PASS
610   RTS
620
630   .START2
640
650   LDY £121
660   LDA (ZPGADR),Y
670   STA VARTOP+1
680   DEY
690   LDA (ZPGADR),Y
700   STA VARTOP
710   DEY
720
730   .LOOP2
740   LDA (ZPGADR),Y
750   STA VARPNT,Y
760   DEY
770   BPL LOOP2
780
790   RTS
800   ]
810
820   NEXT PASS
830
840 PRINT' "OFFSET = &";~START2
    -ASSADR
```

Notes on Source (Listing 1)

ASSADR and ZPGADR are explained in the section on modifying the addresses.

RESVAR is the address of the resident variable Z%. If you wish to use a different resident variable, calculate a new RESVAR as explained earlier.

VARPNT is the address of the Basic variable pointers table.

VARTOP is the address of the next-new-variable pointer.

Lines 150-610 form the break intercept routine.

Line 150. When the break intercept routine is called for the second time the carry flag is set. The program jumps to the code at .SECOND.

Lines 170-200. The address of the byte array is copied from Z% to zero page to suit 6502 machine code indexing methods.

Lines 220-340. The Basic variable pointers table and the next-new-variable pointer, 122 bytes in all, are copied into the byte array.

Lines 400-410. These prepare for OSBYTE &8A and specify the keyboard buffer.

Lines 430-580. A mixture of Basic and assembler is used to produce the code for 15 consecutive OSBYTE calls. Line 520 is equivalent to assembling LDY#, and line 530 puts the appropriate value in the next byte. Line 540 increments the program counter to allow for these two bytes, and line 550 re-enters the assembler for line 560. There are slightly neater ways of doing this with the Basic II assembler, but the system used here works with either Basic. The code produced by this method takes up more space than if we used a loop and a data block within the code itself, but the routine would then need to know the address of the data block and relocatability would suffer.

The data represents O,.,RETURN, CALL,&,7,B,7,2,RETURN,GOTO,5,0,0, RETURN.

The RESTORE statement at line 500 is a subtle but vital necessity. When I first tried to assemble the code without this line, I was perplexed to see an out of data message appear. After counting the data items several times I realise that the assembler was READing the data on its first pass and had none left for the second.

Lines 630-800. This code is called when the instructions in the keyboard buffer are processed, and simply reverses the effect of lines 220-340.

Line 840 gives the position of the last section of code relative to the first.

Listing 2

```
10 REM Listing 2: "EXAMPLE"
20 REM By IAN COPESTAKE. 84JL03
30
40 THISRUN = 0
50
60 *LOAD VARPRES 7B00
70
80 *FX247,76
90 *FX248,0
100 *FX249,123
110
120 DIM Z% 121
130
140 DIM ARRAY$(1,26)
150 FOR NX=1 TO 26
160   ARRAY$(0,NX)=CHR$(NX+64)
170   NEXT
180 FOR NX=1 TO 26
190   ARRAY$(1,NX)=CHR$(NX+96)
200   NEXT
210
220 INPUT''"YOUR NAME",NAME$
230
240 PRINT''"At this point you can
assign some more variables as
direct commands,"
250 PRINT"and check that
they are unchanged after pressing BREAK."
260
500 THISRUN = THISRUN+1
510 PRINT''"This is run number ";THISRUN
520 IF THISRUN = 1 THEN END
530
540 DATA 0,19,1,21,1,3,1,3,1,5,1,19,1,19
550 PRINT:PRINT
560 FOR NX=1 TO 7
570   READ AX,BX
580   PRINT ARRAY$(AX,BX);
590   NEXT
600 PRINT" "NAME$"!"
610 PRINT''"Try some more variables."
```

It's possible to print on the Spectrum screen's bottom two lines with John Lettice's program.

Full display

Every now and again you'll run across a problem that would be solved if you could print on the bottom two lines of the Spectrum's screen. You might, for example, be writing a graphics program, where you need the whole screen for drawing on, or you might just grudge losing the extra two lines space.

You can get an image on the bottom two lines of the screen by POKEing numbers into the relevant parts of the display file, so the logical way of dealing with the problem is to find some mechanism that allows you to do this. Try:

```
10 FOR N = 16384 TO 22527
20 POKE N, 255
30 NEXT N
```

As this one flashes by you'll see the whole screen filled, then the INK on the bottom two lines will be wiped out by the appearance of the OK prompt. Add 40 GO TO 40 and you should have proved to yourself that it's possible to get an image on the report lines.

The Spectrum's display file runs from memory locations 16384 to 22527, so what you're doing is POKEing 255 into each of these. But think about the disadvantage: run the program again, and you'll see that the screen is actually built up in a very bizarre way. First the top line of pixels in the first row of character positions is INKed in, then the top line of the second row, and so on until it doubles back to the second row of pixels, then onto the next part of the screen, and then the next.

POKEs

Table 1 illustrates the full awful truth about the Spectrum's screen layout, and shows you that using POKES to print at any one character position isn't exactly straightforward.

Don't panic, though, because there's a system behind it, and all you need to do is work out the formula. The next thing you need to do is work out the dot patterns you POKE into the character positions using this formula. If you want to produce user defined characters in the report lines, then you're pretty much on your own, although it would be fairly easy to copy user defined graphics you'd already produced into the correct memory locations.

If you want to use the Spectrum's own character set, life's quite easy, as you just have to copy the dot patterns for the character set across from ROM into the screen locations. This is less of a headache, since the dot patterns for each character are held in eight consecutive addresses.

What we want, then, is a routine that will PEEK the values held in ROM for the character set dot patterns, then POKE them into the screen addresses for the relevant character position. The routine presented here is slower than printing on the screen normally, mainly because the program is in Basic, but it's quite adequate for static displays you're not likely to want to change too often.

Turning the text you want printed into DATA statements would be marginally faster, but would lose you the advantage of having a universally applicable formula. Another alternative would be to store the memory locations in DATA statements or in an array, then PEEK the ROM pattern and POKE that into the location, but although this would be faster, you'd lose the advantage of the formula.

If you want to put your own message at the bottom of the screen then it's just a matter of changing A$, making sure you use 64 characters for it.

PCN

Table 1: Display memory map

LINE	START OF LINE	END OF LINE
0	16384	16415
1	16416	16447
2	16448	16479
3	16480	16511
4	16512	16543
5	16544	16575
6	16576	16607
7	16608	16639
8	18432	18463
9	18464	18495
10	18496	18527
11	18528	18559
12	18560	18591
13	18592	18623
14	18624	18655
15	18656	18687
16	20480	20511
17	20512	20543
18	20544	20575
19	20576	20607
20	20608	20639
21	20640	20671
22	20672	20703
23	20704	20735

Program notes

10	Dimensions an array of 64 characters
20	Defines the array
30-90	Main loop of the program
40	Defines B as the CODE of each of the characters in A$, one at a time
50	Determines the address of the first line of each character in ROM in the following way. The dot patterns of the character set start at 15360, and the CODEs of the characters increase in steps of 1, *ie* A is 65 and B is 66. As each character occupies eight addresses, its start address is 8* (its CODE).
60	Determines the address of the first line of each of the 64 character positions to be POKEd into.
80	Loops through the eight pixel lines of each character position. Each character position's start address is 256 below the address of the line of pixels immediately below it, so 256*P gives you each address. It then PEEKS the address of the correct dot patern and POKES it in.

```
10 DIM A$(64)

20 LET A$="THE BOTTOM LINE IS THIS 12345

67890123456789012345678901 2"

30 FOR N=1 TO 61

40 LET B=CODE A$(N)

50 LET C=15360+B*8

60 LET D=20671+N

70 FOR P=0 TO 7

80 POKE D+(256*P),PEEK (C+P)

90 NEXT P:NEXT N

100 PAUSE 0
```

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Spreads its branches

Ian Scales wonders if ACT will take over the Apple/IBM dominated market with a new range of Apricot-compatible micros.

ACT is the Birmingham-based company which expanded from its base as a software house and provider of bureau services to enter the micro market.

In 1982 ACT successfully launched the US-designed Sirius. This particular success story owes its origins to one of those happy intersections of time and place — the place was the UK and the time was the era before the UK launch of the IBM PC.

It's fair to say that the runaway success of the ACT Sirius was due as much to the lack of competition as to the impressive features of the machine.

As it turned out, the Sirius was a non-standard MSDOS machine with features such as variable-speed disk drives which enabled more bits to be put on a floppy. At the time (mid-1982) the Sirius specifications looked particularly nifty. Sirius — or at least Chuck Peddle, the brain behind the product — proclaimed it the first of the fourth generation micros (whatever that means), and in those days, before all things 16-bit were measured in terms of how well they could run the Microsoft Flight Simulation program, it was hailed as a winner.

With a good-sized user base behind it, ACT decided to produce its own MSDOS machine in 1983. Perhaps in deference to a certain US company which was also attempting to stem the IBM tide, the machine was called Apricot — a fruit known to the Greeks as the 'golden apple'.

Now, a year later, ACT has announced a range of products to complement the original Apricot — there is a portable Apricot, an entry-level Apricot and a range of networking/multi-user systems and devices. All the products are software compatible.

F1

Firm Favourite

Like the ungolden Apple, ACT has an entry-level system as well as a slightly more expensive version of its workhorse machine, the basic Apricot. The entry-level system is known as the F1e, while the low-end, but slightly more expensive, Apricot is dubbed simply the F1.

The F1e shaves a couple of hundred pounds off the F1's £995 excluding VAT by slimming the 256K RAM to 128K and taking a side off the double-sided F1 floppy to reduce it to 315K. The missing 128K can be added when required and the normal expansion facilities are available.

This machine is targeted at the educational market with DR Logo and Basic bundled in the price.

We Pre-Tested the F1 — ACT's complete low-end (as opposed to entry-level) product — boasting 256K RAM expandable to 768K, and a double-sided 3½in floppy.

It has been designed to take on Apple's Macintosh and IIc machines. Like the original Apricot, the F1 is transportable — a case is provided as an optional extra.

Expandability is the key to this system. An external 10Mb Winchester and a companion expansion box with five slots will enable additional goodies like interfaces and drives to bring the model up to full-blown Apricot specifications.

With this sort of flexibility in the range, ACT rightly identified compatibility as the crucial element. Like the other models in the range, the F1 has had all the BIOS functions implemented in ROM so all the hardware presents itself to the applications software in an identical fashion. This, says ACT, not only guarantees software transportability between products in the range, but also leaves a respectable amount of RAM to the operating system, graphics display and user space.

Display and inputs

Infra-red keyboard and optional infra-red mouse provide the input. The keyboard is a tiled job with 92 keys. It offers eight 'general' function keys (plus an additional two 'dedicated' function keys), a non-standard upside-down 'T' arrangement for the cursor keys and a full numeric keypad.

ACT promises keyboard and mouse effectiveness up to a distance of two metres, although it remains to be seen how well the infra-red system will deal with interference. This could be a factor in how well the machine does in offices and schools. IBM's PCjr also uses the infra-red keyboard arrangement. When it was introduced in the US, many schools found they couldn't use TVs with infra-red controls or operate more than one PCjr in a given room because the infra-red signals from one machine interfered with another.

The mouse is a 'dual-operation' design which allows it to be used either like the Apple mouse (except that it uses no cable), or as a trackball if you don't have much desk space to move it around on.

The effectiveness of the mouse will depend largely on how many packages ACT can configure or get configured to make the most of it. On the model we tested, only ACT's own 'friendly' front-end made use of the mouse technology. Once you got 'inside' the package, it looked and worked the same as if there were no mouse.

The colour output is RGB and offers a high-resolution of 640×256 pixels on ACT's own colour monitor. Any four colours can be selected simultaneously from a palette of 16 colours — and all four can be shown at once in the 320×256 pixel resolution mode.

The F1 also comes with a generous sampling of applications software. Supercalc, Superwriter and Superplanner are complemented by three ACT efforts — ACT Diary, ACT Sketch and a tutorial package.

ACT Diary uses the ACT mouse to let you keep appointments and make reminders with a natty on-screen representation of an appointments card. Unfortunately, it isn't an improvement on a desk diary.

ACT Sketch, however, seems to be well worth the price of admission. It lets you use the mouse to do all kinds of freehand drawing.

Finally, the biggest feature of the tutorial package is the ACT game, where you play the part of ACT boss Roger Foster and attempt to dominate the computer world.

Like the XI (see page 27), the F1 can also run Digital's Concurrent DOS system, full GSX graphics and GSX Basic — in addition to Personal Basic and DR Logo. The inclusion of GSX graphics and DR Logo bodes well for this machine (and its cheaper entry-level version) in the well-heeled home and schools markets.

Storage and expansion

Storage is provided by either the integral 3½in disk drive or by an additional drive or hard disk unit through the expansion box. The drive is double-sided and high-density. It gives you 720K of storage and runs with MSDOS 2.11 as the included operating system.

Verdict

The F1 is a well designed and pleasant machine. Its pricing is also competitive and should make it an attractive alternative to the Sanyo MBC-555 and Advance 86-B — but its success will rely on the ability to exploit all the gadgets ACT has stuck into it and on software houses seeing the machine as potentially very successful.

Popular Portability

Apricot machines seem to be designed by people with a grocery list of all the lastest technological innovations, but not necessarily a good idea of what to do with them.

These innovations include infra-red input devices, a mouse option, voice input, an 80-column by 25-line LCD flat-screen display and icons.

Most of the features on the Apricot Portable are similar to those of the F1. Its most imposing aspect has to be its large LCD screen. This space-saver, plus the cleverly designed twin circuit boards which form a sort of V-shape, enables the machine to fit into a carry-case.

Display

The Portable is the first machine in the UK to use a full-size (80-column by 25-line) LCD screen, although STM Electronics in the US has released an IBM-compatible version of its Pied Piper micro in the US using the same screen.

Adjustable so that you can change the angle of the liquid crystals to suit the amount, the screen has — unlike the STM machine — no backlight to deal with use in dimly-lit rooms.

Also, unlike most portables of this type, the Apricot Portable has a full RGB interface and can generate the same high-resolution colour as the F1.

Input

In addition to the infra-red keyboard and mouse inputs (identical to those on the F1), the Apricot Portable is the first machine in its price range to use speech input. Although the system did seem particularly sensitive to background noise, the speech input worked.

It offers a full vocabulary of 4096 words using overlays of which only 64 words can be recognised at once. It's questionable, however, whether packages will be written by software houses to support the speech system.

Software

The Apricot Portable features — along with the ACT Diary and ACT Sketch packages offered for the F1 — a software series including SuperWriter, a word processor/spelling checker, SuperCalc, a spreadsheet, and SuperPlanner, an address book/executive planner which might make ACT Diary redundant. That's if you don't already consider redundant the idea of an address book on a micro.

Construction

Between the two circuit boards in the portable sit the disk drive and power supply. This design solves the head-dissipation problem enough to dispense with the usual noisy fan. Combined with the Portable's convection-cooling system, that should keep the Apricot running even on the hottest of summer days. It won't let you use it in the garden, however. Unlike other LCD screen portables, the Apricot Portable needs mains power and thus falls halfway between lap-held and luggable portable categories.

Expansion

The Portable has one Apricot-compatible expansion slot and can take an external less-than-portable 10Mb hard disk. An optional dot matrix printer acts as a portable companion and can also go in the main carry case.

Verdict

ACT has obviously thought carefully about what's currently available and what's currently wanted by the user. From a design point of view not much can be said for the rear views of most of the current crop of PCs. When these things were still novelties, no-one minded the unsightly mess of cables issuing down over the desk.

These days, however, there's undoubtably a lot of room for a product like this.

Hard Working XI

With the recent addition of a hard disk machine and networking to the Apricot family of machines, ACT now has the makings of a major office system on its hands.

The first of these to arrive was the Apricot XI, which gives the standard Apricot a 5Mb or 10Mb 3½in Rodime hard disk in place of one of its 3½in disks. Although different in colour, the XI is almost the same as the standard Apricot in every other respect.

Even the price is not much affected by the hard disk storage capacity. Unlike most hard disk versions of MSDOS machines, for which you pay close to £4,000, the 5Mb version of the XI sells for £2,695 (excluding VAT), while its 10Mb sibling goes for only an additional £300. Certainly, the Apricot is not IBM PC compatible, so perhaps comparisons with machines like the IBM PC XT (a mere £4,150) are inappropriate. In terms of raw power per pound, you're obviously getting more for your money with ACT's XI.

Software

The XI is, of course, an MSDOS machine, and that has to count for something. Lots of popular pieces of MSDOS software have now been converted to run on ACT's 16-bit model, including a much improved version of Wordstar (the program which originally led *PCN* to dub the first Apricot as a slow machine). The XI comes bundled with the Supercalc and Superplanner programs. And at the launch of ACT's new F1 and Portable machines, the XI was even seen to be running the new Microsoft Windows version of MSDOS.

But ACT isn't putting all its money on MSDOS. Purchasers of the XI are entitled to get free copies of Digital's CP/M-86, Concurrent CP/M and Concurrent DOS. Like Concurrent CP/M, Concurrent DOS will let you run up to four applications at once, window those applications, treat the applications as 'virtual consoles' and do printer-spooling, but it will do that for both MSDOS and CP/M programs at once.

Just in case, however, you don't want to get Windows or Concurrent DOS, but do want windowing and integration, ACT has also tied up a deal with Lotus to produce versions of the Symphony integrated software suite for the Apricot.

Symphony requires at least 320K RAM

to run at all, and about 512K before it's really happy. Although it will run quite happily on floppies, there is also an argument which suggests that you won't get the most out of Symphony until you're running it with a hard disk. You can bet that the latter argument will not be lost on ACT or on its dealers.

In view of this heavy hardware requirement, it's worth looking at a few more prices. Memory expansion boards for the Apricot range start at £195 for the 128K board, and £495 and £895 for the 256K and 512K boards respectively. Since the XI comes with 256K, all you'll need to get Symphony started is the 128K board, bringing the total memory to 384K.

Ironically, it's one of ACT's own upgrades that represents perhaps the biggest threat to this marketing strategy for the XI. The double-sided dual disk version of the Apricot now offers 720K storage per disk, a 9in screen and 256K RAM for £2,095.

With the addition of the requisite extra memory, ACT will then be able to offer a Symphony system for about £2,300 (plus VAT, plus the cost of Symphony). It's not that most salespeople won't try to tell you that you really need a hard disk to run Symphony, but rather that ACT won't have to rely on the Lotus tie-up to try to move the XI.

Where the XI will really come into its own is in the ACT network system. For use in the primary network arrangement — which ACT calls Apricot Point 7 — the XI gets an expansion to 512K RAM, an Intel 8086 running at 5MHz, a main processor board that takes up to 1Mb of RAM, Concurrent DOS and seven RS232 ports.

Unlike many other small networking systems, the XI-based Point 7 system allows the host XI (to which the other machines in the system are connected via the RS232 ports) to carry on being used as a work station while it also handles all the file-serving and network duties.

Verdict

The Apricot XI is an excellent buy for an MSDOS hard disk machine. Because of the small price difference between the 5Mb and 10Mb versions of the hard disk, it's probably worth going for the larger capacity to begin with.

If there are any major reservations about the system, they are based on the doubtful wisdom of ACT's non-IBM-standard hardware design, and not on the quality of the product, which seems very good.

CONCLUSION

The F1 and Portable follow-ups to the Apricot further the technology-driven aspects of the ACT approach to design. It could be said that ACT likes to view itself as the Apple of Europe.

ACT has gone in about a dozen directions at once. The sheer volume of technological goodies will doubtless impress many a first-time user, while the price/performance of the system offers excellent value.

ACT now provides a reasonably coherent range of machines. Importantly, the F1 provides a valuable entry-level for first-time buyers, who can be kept supplied with extras or maybe even a new machine to rationalise their application software investment.

Networking is an important component. In the wake of IBM's shattering non-announcement on the long awaited networking standard, ACT seems to have an eye on repeating the success of the Sirius (when the IBM PC wasn't available) and providing UK networking hopefuls with a system in lieu of that from IBM.

In 1984 there are probably two ways to go for an aspiring mainstream microcomputer hardware manufacturer: IBM compatibility on the one hand, or partial standardisation with attractive enhancements on the other — not much of a choice. The trouble with the second option is that it treads the thin line between meaningful enhancements and compatibility annoyances.

ACT is bound by the standard operating system problem — as ACT itself admits, software producers get sick of doing port after port of a successful application package, hence the emphasis on compatibility between the machines in the ACT range.

However, once you start putting tons of extras on top of what is essentially a standard machine (infra-red mice, voice input, and so on) there is a limit to how well the total system can mesh together.

The voice recognition module works well, but it's not a particularly useful attribute if none of the standard software has been designed to exploit it. The same applies to the mouse — sure, you can get the mouse to work with a program, but that's totally different from designing a program to use a mouse. It seems that ACT and other companies bringing out alternative devices to run standard applications packages have somewhat missed the point.

Apple, for instance, can look at current technology and design a good way of applying it to the needs of personal computer users, in the hope that software producers will be attracted to design programs for it. No such hope can exist for a (relatively) small UK-based company such as ACT.

Apricot compatibility is regarded as a strong point. The various Apricots are software compatible — even the Apricot portable with its LCD screen. All the bits of system software unique to the individual machines have been ROMmed, and each machine is claimed to present an identical interface to the applications software. How far this requirement has limited the whole will have to be determined later. The standardisation of the software does appear not to gel too well with the host of extra bits and pieces ACT has seen fit to include with the system.

Apple's marketing push for the Macintosh may well have prepared a lucrative market for the less costly Apricots — by including mice and icons, ACT has helped potential customers make the necessary connection between the products.

PCN

EPROM burn-up

Hywel Francis tackles an EPROM programmer for the Dragon 32.

With Dragon computers spread almost world-wide, there still seems to be a large market for add-ons. This EPROM programmer should be a welcome addition for the MC6809E enthusiast and beginner alike. It allows Dragon owners to 'burn' their own firmware into EPROM, making the machine a cost-effective industrial control tool, giving more protection to those in the machine code game, or just making home-grown software more convenient.

Getting started

The unit plugs into the Dragon 32's cartridge port and, since it needs no external power supply and its operating system is on ROM, it will auto-boot as soon as the Dragon is switched on.

Initially, you are presented with a menu of 12 EPROM device numbers. After a selection has been made, another menu comes up, with the 12 available functions. These allow complete control over the loading, checking, and addressing of the EPROM.

In use

Programming the EPROMs is simply a matter of selecting the device to be programmed, and downloading the data held in memory. The data is then burnt into the EPROM at the speed required by the manufacturer's specification. For some devices, this can take quite a while although the new Intel algorithm shortens this time considerably for some devices.

So, what do you do when you have programmed your EPROM? Well, there are three options.

You can open up one of your old Dragon Data cartridges, remove the EPROMs, and replace them with your own. The drawback here is that these cartridges will only accept two 4K 2532 EPROMs but, with a slight modification, two 4K 2732s may be used.

Alternatively, you can use the sideways intelligent ROM board, available from the same supplier, which will hold up to three ROMs. Each of these may be invoked by on-board software.

As for the final possibility — if you are handy with a soldering iron, obtain a printed circuit board that can be plugged straight into the Dragon's cartridge port. This has all the correct pin-outs, and is also available from the same supplier.

Documentation

The comprehensive manual supplied with the unit assumes no prior knowledge of EPROM programming and states boldly: 'The need to refer to this manual will be a rare event after the first perusal.' In fact, the only time I needed the manual was to check the various EPROM sizes.

Verdict

Although there are a number of EPROM programmers on the market, this particular unit offers several advantages over its rivals. No external power supply is needed for the programming voltages and no complicated DIP switches are used to

select the appropriate EPROM — this is done in the software. There is automatic overload protection if the EPROM is inserted the wrong way round and the menu-driven software is quite comprehensive. The programmer is probably a worthwhile investment as it does not matter whether the EPROM to be copied holds Z80, 6502, or even 68008 software.

PCN

Product EPROM Programmer **System** Dragon 32 **Price** £78 **Supplier** Steve's Electronics Supply Co, 35 Castle Arcade, Cardiff CF1 2BW, Tel (0222) 41905

Intel's intelligent algorithm

A recent innovation announced by Intel dramatically reduces the programming time for the 2764 (8K) and larger EPROMs. Previously, the manufacturer specified that each location in the EPROM could only be programmed by applying suitable logic pulses of 50milliseconds duration to each location. This meant that programming a 2716 with 2048 location would take $2048 \times 50 = 102.4$ seconds.

To program a 2764, 8192 locations would take four times as long — nearly seven minutes. On this sliding scale, the large 27256 (32K) could take nearly half an hour to program.

Intel's innovation works by applying short, 1millisecond programming pulses to the EPROM, and continually monitors whether the data has been successfully burnt in at that location. Because of this factor, only a minimum amount of time is spent at each location in order to make sure the correct data has been programmed into the chip.

The programming times achieved by this method are considerably less than before — an 8K in 50 seconds and a 16K in 100 seconds. This compares favourably with the 2716 (2K), where this technique cannot be used.

Functions available on Programmer

Verify	Checks the data stored in memory against the data held in EPROM. A failed message and the location address is printed with a mismatch, and a passed message is issued with a match.
Load from EPROM	Loads data from the chip held in the ZIF socket on the unit.
Program EPROM	Sends data, held in memory, to EPROM, a red LED lights up when the programming current is flowing.
Empty check	Examines the EPROM to ascertain whether it has been erased.
Examine/ Change	Facilitates the modification of data in a memory location.
Clear data	Sets the contents of the memory storage to FF hex.
Complement/fill data	Typing C will execute a complement on the data held in memory. F will fill the memory with a user specified number in all locations.
List	Lists the current data in memory to either screen or printer. The printer option gives pages of 16×16 of address and contents in hex and ASCII like a dump.
Set address limits	Allows user to specify and restrict the range of addresses for the next operation. This facility is ideal for patching an EPROM.
Load from memory	The place in memory where the data is kept may be located in any part of the Dragon's addressing range. This section uses absolute addressing to cope with this.
Set device type	The target EPROM may be changed at any time, useful when loading the contents of two 2K devices into a single 4K device.
Move memory block	Rearranges the storage area in user defined blocks.
Quit	Returns control to Basic.

64K User RAM
and not a bit less...

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£275.00 INC VAT

The MTX512 comes with 64K RAM, expandable to 512K. Add to this another 16K VideoRAM dedicated solely to handling the screen memory, and you've got 80K. But how much user RAM is left when you're running high resolution graphics programs? Unlike other machines, the answer is still 64K, because the MTX512 uses the 16K VideoRAM plus a second processor – the Texas TMS9929A – to take care of screen graphics. The main processor used in the MTX512 is the Zilog Z80A, which gives the MTX Series CP/M compatibility – CP/M was written around the Zilog Series. And the Z80A inside the 512 operates at 4MHz.

Expansion is no problem with the MTX Series, because it is designed as an interlocking system – from the MTX512 up to the powerful Memotech Silicon Disc Systems.

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- PAL composite video colour Monitor port

THE RS232 COMMUNICATIONS BOARD
(required for disc expansions)
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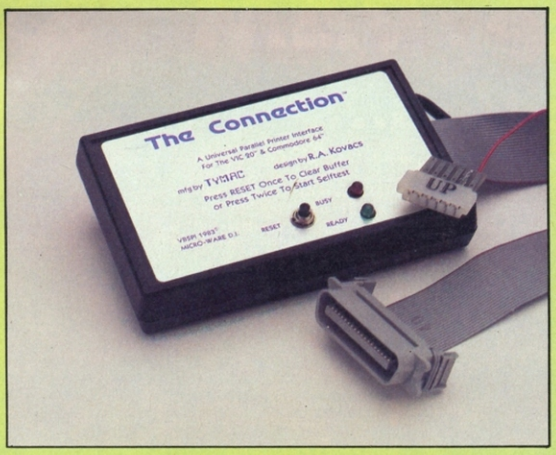

COMMODORE CONNECTION

Barry Miles hooks up his 64 to an intelligent printer interface.

PCN PRO-TEST PERIPHERALS

The Connection is an intelligent printer interface for the Commodore 64 and Vic 20. It allows both of these machines, with their strange character sets, to be used with virtually any dot-matrix printer giving full Commodore compatibility. At the moment, it is only available from the US.

First impressions

The Connection comes in an attractively labelled box with three plugs leading off it. The DIN cable goes into the 64 or disk drive's serial socket and a conventional Centronics plug connects to the printer. The third cable plugs into the cassette port to obtain a five volt power supply for the system. Fortunately, this plug has an extension coming out of the back for the cassette connector, so there is no problem using both the Connection and the tape unit.

Levering up one corner of the top cover reveals two DIP switches. These are not mentioned in the manual so a little experimentation was required to figure out what they did. One of these alters the number of line feeds to the printer after a carriage return. The other one doesn't seem to do anything in particular.

Documentation

Accompanying the Connection is a five chapter booklet containing all the necessary information to enable you to get the interface up and running. As usual with US products, the tutorial and installation sections are written in a chatty, informal style.

The reference section is slightly confusing because it tries to deal with too many printers at once.

Features

The main features of the Connection are its emulation ability and the fact that it can be configured to suit your printer. The manufacturer is quite willing to supply a different ROM when you change your printer, so you can be sure of getting the maximum benefit from the device.

In use

The interface really comes into its own when you take advantage of its special capabilities. For instance, it is possible to indent printing by a number of characters, change the width of the printing, and print Commodore graphics characters.

Numerical work is eased with the tabbing capabilities. Simply precede the data to be tabbed with CHR$(16) followed by a two digit number specifying the number of tabulation spaces counted from the left margin. You can define your own graphics symbols and you can even tab the print head across by individual dot increments.

The Graphic repeat function, together with the dot tabulation function, can be used to give a very powerful graph plotting facility. Sending special codes to the printer is covered by sending two escape codes followed by the character code. These will be transferred directly to the printer without any modification by the interface.

There are six modes of operation:

- Ready, indicated by the ready LED, shows that the interface is ready to receive data from the computer.
- Wait (wait LED lit) occurs when the interface is waiting for something to happen, on the printer side, and will not accept any more data until something does. There is a buffer within the Connection with nearly 2K capacity, and when this fills up, the interface goes into wait mode until the buffer has enough space in it for more data. The reset button can be used to empty the buffer and return you to ready mode, but all the data is lost.
- Print Test Mode is invoked by pressing RESET when the interface is in ready mode. When the ready lamp starts blinking, the reset button should be pushed again and the test begins. This consists of printing a full page of characters confirming the correct functioning of both the printer and the interface.
- Emulation mode allows you to turn your printer into a Commodore 1515 or 1525, if your interface has been correctly matched to your printer. This matching is made necessary by various technicalities such as graphics characters, etc.
- Total Text mode enables the printer to emulate a Commodore printer, except that no graphics symbols are printed. Substitutions are made instead and, in some instances, these may be of more use than the real graphics characters. Cursor movement and colour assignment symbols are printed as three characters which describe the function — HOM is home, GRN is green, and so on. The other graphics symbols are printed as a number representing the CHR$ (CBMCII) code number associated with the symbol.
- Transparent mode allows information to be sent without any interpretation at all, and codes are sent directly to the printer.

Additional commands are available from the Connection itself, to make the printer more usable. The unit can be given a different device number from the usual No 4. The Fold command can be used to improve the readability of program listings by starting a new line when a colon or space is encountered within ten columns of the width limit. Status can be used to retrieve information about the current parameters and general well-being of the interface.

Verdict

The Connection is an extremely attractive device which will improve the versatility of your printer and save frustration if you buy software which is peculiar to Commodore printers. For $119 it is not cheap, especially when the carriage, duty, and VAT have been added.

However, it is easy and convenient to use. For some people, this may be more important than spending the extra cash.

PCN

Product The Connection Intelligent Parallel Interface. **Price** $119.00. **Manufacturer** Tymec Controls Corp US. **Outlet** Microware, 132 B, Rt. 23, Butler, NJ 07405, US.

For the 48K ZX Spectrum

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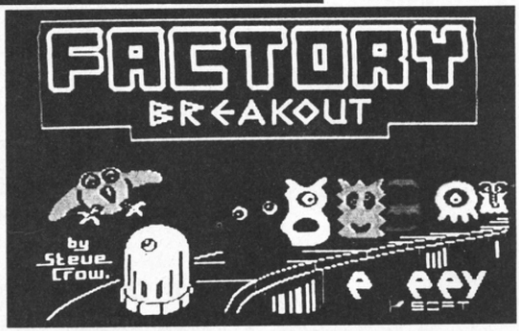

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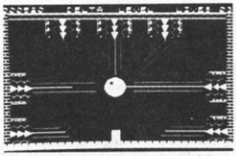
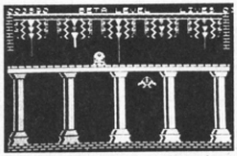
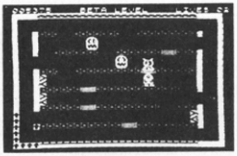


Zap the micron rays to hatch out of the egg capsule.



Dash across the conveyor belts on the reject line – don't let the killer canary catch you!



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A very high quality product direct from the manufacturers, contained in attractive sloping box with low insertion force socket and neon indicator for programming fitted as standard, the software adopts the high efficiency method for programming 2764 and 27128. This allows up to 100% faster programming, software in machine code, supplied on cassette and can be placed in Eprom. Very easy to use, menu driven with easy to use instructions. This unit is completely self contained with its own power supply and plugs into the user port.

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SOFTWARE

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Note to software publishers: If you wish your company's product to be included, please send only the very latest releases to *Bryan Skinner, Software Editor, PCN, 62 Oxford Street, London W1A 2HG;* and please don't forget to include prices and a telephone number.

Games

Unusually the BBC dominated the new releases this week. We'll be carrying a full review of *Xanadu Cottage/Ebony Tower,* the new releases from Alligata soon. The pack is a two-adventure game, good valuefor £7.95, and both games are text-only. In *Ebony Power* you seek and destroy a Dragon, while *Xanadu Cottage* is more mysterious — so much so, in fact, that you have to puzzle out the objective of the adventure for yourself. *Xanadu* has better descriptions of the locations, while *Ebony Tower* has a few, if rather simple, sound effects.

Uncle Claude is Alligata's other new BBC game. Its another 'them and us' situation, the workers against the bosses confrontation in an arcade-type game. As Micro Micky, you sneak into Uncle Claude's warehouse to get goods shipped to shops before the profit-hungry Uncle Claude can raise prices and jeopardise your job. To do this you must load goods such as cassettes, BBCs, radios and so on (but no QLs) onto the conveyor, fighting off Uncle Claude all the while. There are 12 levels and an extra life every 12000 points.

The first releases from Braingames, a new company, are *Fame Quest* and *Election Strategy* for the Commodore 64. *Fame Quest* is a sort of adventure, resembling Automata's *Crusoe* on the Spectrum (this issue). As a knight in days of yore, your quest is to gain as much fame and glory as possible. The screen display shows a small map at top left, a castle in a wood and you can wander about these environs via single key presses. There's no text entry as the game is completely menu-driven. You can elect to attack the various people you encounter, though bashing monks or peasants will lose you fame points. Aimed at the newcomer to adventures, this style of board/strategy/adventure game is becoming increasingly popular.

Braingames' other release is bang-up-to-date. You play against the computer or another player. The scene is the US elections and the battle between the Democrats and the Republicans. You can choose to spend part of your budget on promotional activities such as endorsement by a famous figure. At the end of each session the votes are counted, results being shown on national and regional maps. Neither game is particularly exciting or original, but both are competent and if you like that sort of thing will have you coming back for more. Braingames wrote *Railboss* and *High Flyer* for Commodore, and is working on BBC translations. The company is due to release two more games in September, *Castle Fear* and *Flame Island*, and hopes to complete versions of all its games for the Spectrum soon. *Castle Fear* and *Flame Island* will be 100 per cent machine code adventures with graphics and 500-word vocabularies. There is also the possibility that Braingames may employ ex-Redshift programmers, which should bring more excitement to the range.

Utilities

Romik's *Graphic Editor* for the Commodore 64 is due for a September launch, probably at the PCW show. The package looks reasonable on paper at least, though we haven't had a chance to give it a good look. There's a character editor with some 25 commands including mirroring horizontally and vertically, horizontal and vertical scrolling, as well as the more usual functions. The screen editor is designed for use with the character editor for creating pictures for games and other programs. There is also a sprite editor with up to 16 display window images which can be viewed in sequence and transferred to animation memory.

Computer Concepts continues to produce high-quality ROM-based software for the BBC; its latest releases are *Printmaster* and *Caretaker. Printmaster* is a printer handler which caters for a fairly wide range of printers including the Epson MX80, FX80 and RX80. The ROM supports screen dumping, and any part of the screen may be dumped to any position on paper in any of four orientations. *TDUMP sends text in any mode to the printer and *FDUMP can be used to dump disk files. *Caretaker* adds 17 new commands to Basic including a search and replace facility as well as a renumber routine which allows you to move parts of programs within a program. *INSERT lets you splice routines and other lines of code from tape or disk files into a program in RAM. The range adds up to an impressive programmer's utility.

Business System from Hestacrest shows it is possible to use a Spectrum and Microdrives for serious small business applications. Three modules have been released: purchase and sales ledgers, as well as a cash book. A nominal ledger and accounts program are due to complete the suite later this year. Each module can handle 40 batches and 1000 transactions per month and will cost £32.50 each, with discounts for two or more units.

Astro Art 'blends accuracy with fantasy in a continuous kaleidoscope of colour', runs on the Spectrum, but quite who'd buy this beats us. It cycles through images of science-fiction type space scenes, but there again it only costs £2.95 and may be suitable for window displays.

Comp-u-Cater joins the handful of cookery programs for micros and offers a solution to the daily domestic problem of what to cook, and what shopping to do. You can select up to six recipes. The makers claim 12000 combinations are possible from the 200 recipes and 400 ingredients in the database.

The Miditrack software for the Spectrum and BBC comes with an EMR interface for Midi-compatible instruments (Musical Instrumental Digital Interface). The *Miditrack Composer* system allows you to control Midi-equipped instruments from the micro while the *Performer* allows you to use your micro to simulate the control of an eight-track digital tape recorder. PCN

BBC

Uncle Claude	£7.95	Alligata 0742 755796
Xanadu & Ebony Tower	£7.95	Alligata 0742 755796
Printmaster	£33.35	Computer Concepts 0442 63933
Caretaker	£33.35	Computer Concepts 0442 63933
Miditrack Composer	£150.00	Electromusic 03744 67221
Comp-u-Cater	£24.95	Shumwari 062 84 5751

COMMODORE 64

Election Trail	£7.95	Braingames 0273 608331
Fame Quest	£7.95	Braingames 0273 608331
The Graphics Editor	£14.99	Romik 0753 71535

DRAGON

Thermo Nuclear War	£5.00	Zircon 01 986 3368

ORIC/ATMOS

Dice	£15.00	Eborsoft 0904 411873
Busy	£49.00	Eborsoft 0904 411873

SPECTRUM

Astro Art	£2.95	Eclipse 01 330 3116
Miditrack Performer	£169.00	Electromusic 03744 67221
Business System	£72.00	Hestacrest 052 523 7785

THE PEOPLE'S PROGRAM

John Lettice finds that a new word processor for the IBM PC involves him in an eight-hour Sunday nightmare . . .

A package called Volkswriter might just give you pause for thought, and its Californian origins, if anything, make things worse. The title is actually based on Volkswagen, and it's billed as the people's word processor.

Since the IBM PC's launch quite a few people have had a stab at ousting Wordstar as the industry standard word processor, generally with little success. Many packages, such as Easywriter, have taken the 'easy to learn' approach to breaking the monopoly, but this approach is its own downfall. Sure, you can make a word processor easy to learn, but once users have got the hang of it they're going to be looking for more powerful facilities, and they'll soon realise their user friendly program is only a fair weather friend.

Getting started

Volkswriter has responded well to the 'forget the manual, stick it in, see if it goes' approach. It comes as a program disk and a tutorial disk, but after gambolling around in it for a few days I found myself unqualified to evaluate the tutorial. The menus are clear enough for you to teach yourself without using it, so it's more a demo than a tutor.

As far as easiness to learn is concerned, Volkswriter is comparable to Easywriter, and it's a lot more flexible. It comes configured for drive A for the program and B for data, but it's a doddle to alter this using the CONFIGUR applications program. Even without reconfiguration, you can boot it up from any drive you like, and it will run almost, but not quite, true.

If you're using a number of drives, floppy or hard disk, it's possible to specify the data drive by prefacing the filename with B: or whatever, but in general the last drive you used is taken as the default. This review, incidentally, was partially written with Volkswriter reconfigured for use with drive C: of a removable hard disk unit, and it proved possible to use all the program's facilities from C:.

Easywriter, on the other hand, is configured for drives A: and B: so if you get a hard disk you find yourself having to upgrade your software. And it's not just hard disks that are poorly catered for in standard packages. The Microsoft RAM disk is also badly served because it reconfigures the PC to think of it as drive C: and many packages won't cope with this.

So charging about to whatever drive I fancied came as a breath of fresh air to me, as indeed did the ease with which I could move the entire program across to the hard disk without winding up in a mess of barbed wire. Any protection apart from the licensee's name being nailed to the title screen went completely over my head.

An incidental to this is that the program will actually edit itself. You can retrieve data, COMM and EXE files at will, although I don't give much for your chances of making sense of the strange flashing mess of the last two.

There's a similar facility for reading other people's files — Volkswriter files are completely ASCII — so it's quite feasible to move files from other programs, or even other word processors, and edit them. For example, you can read Easywriter files, while Wordstar won't even believe they're there. One slight disadvantage with reading Easywriter files is that margins and carriage returns aren't recognised, so they turn out as massive blocks. And as Volkswriter, with no margins, assumes a default of something like 250 columns that's an awful lot of horizontal scrolling . . .

In use

Once you've loaded the program you get the aforementioned licence message with a window at the top showing 12 single key commands. Hit D and return and you'll get a directory of the current default drive, while specifying a drive before return gives a directory of that drive. You can also allegedly specify (and save to) a sub-directory (handy if your disk is crammed with 101 different printer drivers) under PCDOS 2.0, but my DOS didn't want to know about that, so I couldn't check it.

You don't automatically get a disk directory when you're in command mode — as you do with Easywriter — but if you're using sub-directories this may not be a bad thing. All commands are single key entry from the command mode, and at most levels the program is pretty intelligent on error-trapping. If you've been editing something and haven't saved it, for example, and try to exit the program, you'll get an opportunity to save it before you go. But if you've just saved it you won't, because you don't need it.

Retrieving a file from disk automatically puts you into edit mode, where things get particularly pleasant. F1 is the standard help screen toggle, but this one scores heavily over its rivals by giving you practically every command you'll need as combinations of function keys and Ctrl, Alt and Shift.

Producing underline, bold, superscript and subscript involves sticking markers at the start and end of the word(s) in question, so it's easy to see what you get. The Volkswriter comes with 21 printer drivers attached, ranging from IBM and Epson to 'typewriter with automatic linefeed'. Before you can say 'what in heaven's name is a Lexington' you can have the program tailored to your printer.

The printer driver is selected through a menu which also allows you to specify line spacing and lines per inch, page length, number of columns, and so on. You can save this as a format file, and by embedding a pointer to this at the start of your deathless prose you can associate particular formats with particular files. This means when you load the file you automatically load the format. Embedded commands for headers and footers are also catered for, so ideally you'd end up with a whole range of header files with associated format files, and plug them in at will . . .

Now the bad news. Until the previous paragraph was tapped out, Volkswriter was running like a dream. But your correspondent has just emerged from an eight-hour nightmare repairing the damage done by a bomb-out which corrupted the system and program disk, and perpetrated some kind of nightmarish text-merging operation on the data disk.

Sometimes when you're tapping away at a fairly long piece of prose the PC apparently starts to go wild, drives switch back and forward rapidly, and the screen goes blank. The first time this happens is worrying, but you soon get used to it, and that's the devilish cunning of the program!

Normally you get a message on the screen telling you you're close to the maximum document size, and suggesting you save the file and start another file, or get yourself some more memory. I can't get potato chips, never mind the silicon variety, at 11 o'clock of a Sunday night, so when it happened this time I tried to save the document — and it wouldn't get itself onto the disk.

'Missing sector on drive A,' it claimed. 'Reinsert disk. Try again? Y/N.' Hit Y, same message, hit N, you get the notice telling you to go out and buy a bag of RAM chips again. Another go and this time I got a glimpse of the message 'file stored' flashing by. I checked this by retrieving the file, and saw the first third, followed by two thirds of empty file, sail by just before the PC crashed, leaving both disks in ruins.

Verdict

A small postscript to the above is that next day my Easywriter disk bombed as well, but took only one small file with it, so Volkswriter is still well ahead on Nagasaki points. It really is disappointing to see something as easy and as powerful as this strike out. I'm not sure why it did so, and maybe I was just unlucky, but the mayhem the program caused suggests that error-trapping could be faulty. PCN

RATING (/5)

Features	★★★★★
Documentation	★★★★
Performance	★★★★
Usability	★★★★★
Reliability	★★★★
Overall Value	★★★★

Name Volkswriter Deluxe **Application** Word processor **System** IBM PC **Format** Disk **Price** £264 **Distributor** Vaser, Amersham (02404) 5434.

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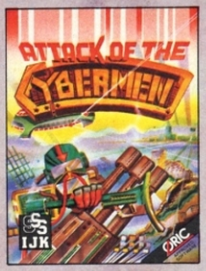

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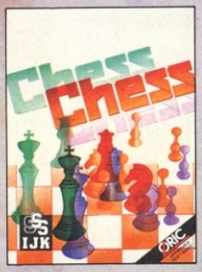

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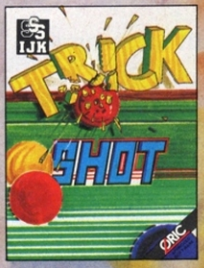

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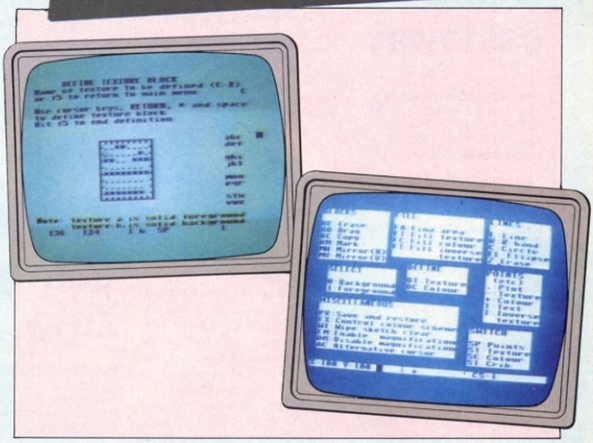


Stuart Cooke tries his hand at a new graphics package.

Quite what the long-dead masters would make of computer graphics I don't know. Despite what their reaction would be, we have to accept that computer-generated art is becoming quite a part of our daily lives.

Panorama (H), from Talent Computer Systems, is one of a series of packages the company produces to help you design graphic pictures on your Commodore 64. Panorama(H) allows you to draw full screen colour pictures, and then save them onto tape or disk for use in your own programs.

In use

First impressions lead you to believe that a lot of thought has gone into the design of this program. However, after a few minutes work you find that user friendliness is definitely lacking.

A help screen is an integral part of the software. A press of the spacebar will reveal all the available commands.

Once you are on the drawing screen, you immediately see the cursor, which is made up of the characters T, C and S and is definitely too big and awkward to use. Fortunately, a glance at the help screen shows that alternative cursors are available, and by pressing 'AC' you have the choice of invisible or cross hair, either of which are more usable than the TCS logo.

The cursor keys or the joystick are used to move the pen around the screen. All movement is accompanied by what can only be described as an extremely annoying screeching noise — what's more you can't turn it off. The only way to get rid of it is to turn the volume down on your TV, but then you can't hear the rasping sound that appears when you try to do something the software doesn't like.

You can think of your cursor as a kind of pen. Pressing the '.' key or the fire button will leave a dot of the current pen colour — either the foreground or background colour. As well as printing dots it is possible to turn the pen on permanently, leaving a line wherever you move.

Commands

There are numerous commands to make the life of the artist easier. Most commands are two letters which are given on the help screen. Every command has a border colour associated with it. For example, when you are using the circle command, the border turns orange. It's a nice idea which doesn't quite work. There are 13 different border colours and it is difficult to remember which colour belongs to which command.

Panorama(H) has a few commands you don't find on other programs, but then again some of the more important ones are missing.

One command I found extremely useful was DRAG. By defining the two corners of a block, you can move the picture inside the block around within that same boundary. This means if your herd of flying bananas happens to be a little too high in your bright green sky, it's extremely easy to move them to the correct position.

Commands for drawing pre-defined shapes are certainly lacking. Most drawing packages allow you to draw circles, boxes, triangles and polygons. Panorama(H) has the CIRCLE command, but if you want any of the other shapes you must draw them for yourself. This isn't difficult, but remember that every movement of the cursor is accompanied by that atrocious noise.

Using colour within a drawing proved to be much more difficult than with some other drawing packages on the 64. The 64 only allows two colours within every eight by eight square. This made it very difficult to get a picture just right without a lot of careful planning. In fact, it is easier to sketch out your picture on graph paper first.

As well as leaving lines of 'ink', you can also get the cursor to leave a trail of colour or texture. A texture is an eight by eight square with certain dots set. The program allows you to define a number of these textures yourself.

Problems with colours and textures really become apparent when you try to fill in an area with colour or texture.

The first thing you have to do is move your cursor within the shape that you wish to fill. Next you need to type FA, which will fill the area, then erase it. All this does is set up the area in which the next fill is going to occur. This filling in and erasing is very slow; in fact, it gets very boring if you are defining a large area.

Now you can fill the area. If you try to fill it with colour, the background colour of all the character squares in the defined area will change. This means you get square edges. If you need to fill in an area and have curved edges, you first need to fill in the area with a texture and then with colour.

This is much easier to do than to explain. However, it is definitely not the best way to do it. Most other fill routines on the Commodore 64 expect the area you want filled to be surrounded by the ink colour you want to fill it with. When the fill takes place, it simply plots lines of ink until it meets a boundary of ink of the same colour. This is definitely easier to use, and much faster.

Verdict

Too much thought has gone into the design of this program, and what should have been a very simple and useful drawing tool has been made a little too difficult to use.

Having a cursor which makes a noise every time you move it seems a very good idea. In practice, however, it becomes rather tedious. Panorama(H) does have a few good points, but personally I've used friendlier programs and won't be using Panorama(H) for my next drawing.

RATING (/5)

Features	4
Documentation	3
Performance	3
Reliability	4
Usability	3
Overall value	2

Name Panorama(H) **Application** Graphics aid **Price** £17.95 tape, £19.95 disk **System** Commodore 64 **Format** Tape or disk **Publishers** Talent Computer Systems **Other versions** None **Outlets** Talent Computer Systems, Curran Building, 101 St James Road, Glasgow G40NS, 041-552 2128.

SPECTRUM 48K

Island castaway

Name Crusoe **Price** £6 **System** Spectrum 48K **Publisher** Automata, (0705) 735242 **Format** Cassette **Other versions** None **Outlets** Retail/mail order

This minestrone of game types has a strong adventure element, but all the action is seen on screen and there are some real-time hazards.

Objectives

Crusoe wishes to return home, preferably richer, but the main battle is simply to survive.

In play

At top left is a square map of the current area of the desert island. The castaway is shown as a tiny user defined graphic, together with barriers such as thorny ground and dense vegetation. Fruit trees appear as tiny purple umbrellas and cacti look like spikey mauve spiders. Sometimes animals appear to career about briefly. Where the sea can be seen, a clever interrupt sequence makes the waves ripple, but the sound is limited.

Crusoe's status appears to the right of the screen and you need to keep a beady eye on this to check he's adequately fed and watered. Also shown are Crusoe's vigour, which decreases as he gets hungry or thirsty, and the prevailing weather conditions.

The lower part of the screen is reserved for command input and smart answers from Mr Lonely-heart.

The keyboard handling is distinctly odd and takes some getting used to. Worse still is that Crusoe himself moves slowly, so making a journey can be tedious. Sometimes the only way to get where you want to go is to take to the water, which involves getting Crusoe into his swimming costume, and then back to land mode. Moving to an edge of the current map forces the next one to be drawn quickly.

Other commands are available, and necessary. You will learn to spot fruit trees and water so you can tell Crusoe to eat and drink at opportune moments and it's as well to keep his strength up. Vigour decreases according to factors like the weight of items carried.

There are some 75 objects on the island, shown as red spots on the map. Moving Crusoe towards them makes him tell you what they are and you can ask him to give details. There are scraps of paper littered about and these may have cryptic clues written on them. Other items include a violin, bones and carved stones. Even Man Friday lurks somewhere.

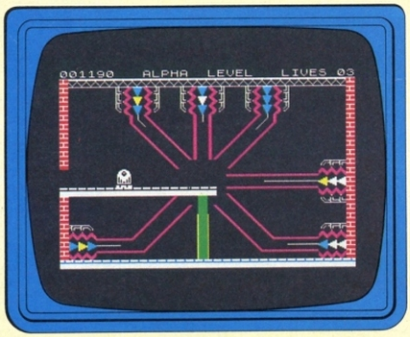
Verdict

Although it's difficult to get very far at first, overall it's an enjoyable and difficult adventure. Recommended.

Bryan Skinner

RATING (/5)

Playability	
Lasting appeal	
Use of machine	
Overall value	



Quirky Zirky

Name Factory Breakout **Price** £5.50 **System** Spectrum 48K **Publisher** Poppy Soft, (0635) 23490 **Format** Cassette **Other versions** None **Outlets** Mail order/retail

The simplest games are often the best and this new release from Poppy Soft is a perfect example.

Objectives

You must help robot Zirky break out of a factory, since alien monsters have activated its self-destruct mechanism.

In play

There are three screens, but five skill levels. Alpha is the easiest and you'll certainly need low-level practice before attempting Beta, let alone Epsilon.

The first screen shows Zirky in a white egg capsule in the centre of the screen. Surrounding Zirky are seven tunnels, along which deadly micron rays approach. A successful hit from a ray loses one of Zirky's three lives. You can rotate the capsule using the five and eight keys, and pressing zero fires Zirky's short range defence laser. The key combination is awkward and at Epsilon level steady nerves are called for. During the action a power column beneath the capsule grows up and finally Zirky hatches out into the very latest Zirkonium Mark 3 robot to be taken via conveyor belt to the second screen—the reject line.

Here Zirky moves right and left across a floor supported by yellow columns. Reject rays descend from the ceiling at different rates according to the skill level. A yellow bird flaps back and forth beneath the floor, rising a little on each pass. It may look like a grinning canary, but contact with it is lethal so it doesn't pay to hang about. The columns turn from yellow to white as Zirky crosses the floor, and at harder levels the conveyor belt plays strange tricks, so controlling Zirky's movement is extremely tricky. A successful traverse takes Zirky to the final screen.

This is the lift room and consists of a sort of maze with openings left and right. Each level has coloured blocks which change colour should Zirky fall through. Moving Zirky to the sides of the room carries him up, and it's possible to slide him sideways onto one of the levels on the way.

The aim here is to make all the doors change colour, then start again with another colour as in *Qbert* and variants. If you can get Zirky to one of the flashing force fields, the aliens turn white and are temporarily vulnerable, giving Zirky extra time to manoeuvre. Once the doors are removed, a bonus life is granted and Zirky returns to the reject room. At some point Zirky may discover a key which allows him to escape the factory, but that still eludes me.

Verdict

Very good value for money. The screens may be simple, but they're uncluttered, nicely drawn and the action is smooth.

Bryan Skinner

RATING (/5)

Playability	
Lasting appeal	
Use of machine	
Overall value	

BBC B

Band on the run

Name Swords and Sorcery **System** BBC B **Price** £10.35 **Publisher** Kansas City Systems, Chesterfield, 0246 850357 **Format** Cassette **Language** Basic/machine code **Other versions** None **Outlets** Mail order.

One snag with adventure programs is that, like crosswords, they are enormously satisfying to complete, but they are not much use afterwards. *Swords and Sorcery* overcomes this drawback.

Objectives

The usual fare — tramp around tunnels, trounce trolls, and take home the treasure. However, Swords and Sorcery offers a randomly generated environment each time you play. The other difference is that you are not alone but one of a band.

In play

Your merry band is generated at random at the start but you do get to give them names. Each member possesses varying attributes of strength, carrying power and magical abilities.

The upper half of the screen is used for the description of the current location, inhabitants, objects, exits and messages, the lower half for the names and status of your gang.

Moving around the multi-levelled dungeon is by the usual single-letter direction commands (N, S, U, etc). Although the game is text-only, you can call up a map which will show, in relation to your current position, those chambers already explored.

Certain key words such as TAKE, DROP, LOOK, etc can be typed in full or called up by hitting the appropriate function.

The dungeon is heavily populated with mad monks, goblins, orcs and thieves who may be friendly or hostile. You may well lose one of your colleagues in the battle, but should you wish to extend your circle of helpers, you could try bribing or recruiting an inhabitant.

Objects lying around the dungeon include a magic axe, a dragon's tooth, a golden orb and a rolled scroll. Some help, some harm (their properties appear to stay constant from game to game) — it's up to you to find out which.

Should you want to stay with the same scenario, a save game feature is included. The dungeon is randomly generated at the start of each new game and there are nine levels of difficulty to choose from.

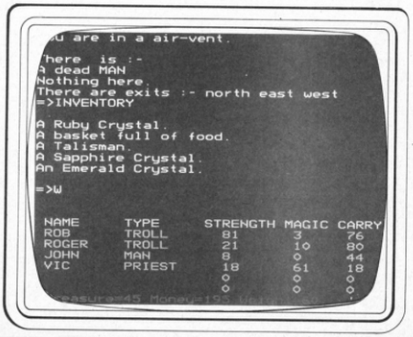
Verdict

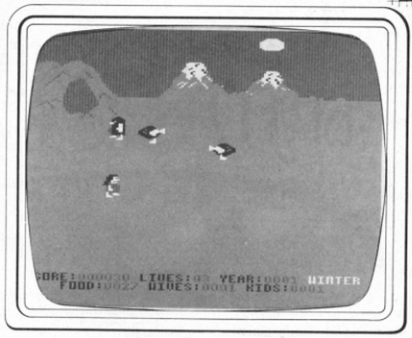
Rather simpler than a normal adventure with more braining baddies than racking brains over puzzles. The random generation and ability to build up your attributes ensure interest is sustained.

Bob Chappell

RATING (/5)

Lasting appeal	
Playability	
Use of machine	
Overall value	





Caveman rampage

Name BC Bill **System** BBC B **Price** £5.50 **Publisher** Beau Jolly 01-567 9710 **Format** Cassette **Other versions** Spectrum, Commodore 64, Dragon **Outlets** Retail.

This new game from Imagine is in for a lot of criticism from organisations trying to protect battered women. I've seen some violent games in my time, but seeing women clubbed on the head and dragged off to a cave to produce children had me cringing in my seat. I suppose in prehistoric times a character like BC Bill could get away with it.

Objectives

After leaving his tribe to seek his fortune, Bill has found himself a comfortable cave and has decided to start his own dynasty. The object of the game is for Bill to collect as many wives as possible.

To do this he must find a woman, club her and drag her back to his cave. Once Bill starts accumulating wives they start producing children. And Bill must keep his family well fed by clubbing food and taking it back to his cave. If that's not enough to keep our caveman busy, he also has to fight off raiders and the odd dinosaur.

In play

The game kicks off with a hunky picture of Bill armed with his club. Then, to the accompaniment of a jazzy tune, up flicks a blue sky, green mountains and a makeshift cave in the top left corner of the screen.

At the bottom of the screen is a constant record of the number of wives and children Bill has. The amount of food, how many years have gone by, the season and your overall score are also shown.

With one wife, ten points for food and three lives to play with, Bill went on his rampage. Controlling Bill and his club via the keyboard proved difficult at first — but I soon got the hang of it. Moving smoothly across the screen, Bill clubs one of the women bobbing along. Gradually he manages to get four wives and two children, but sadly they leave him because he cannot get enough food.

It takes ten years for each of Bill's offspring to reach maturity when they will leave and fend for themselves. For each child he keeps fed for ten years he receives a bonus point.

As the seasons go by, Bill's cave is constantly raided by tribesmen and he's eaten several times by dinosaurs. Sometimes it's difficult to tell the difference between Bill and a tribesman because they are both dressed the same.

Verdict

The graphics in this package are fairly good. The objects move quite smoothly on the screen with reasonable sound effects to accompany certain actions taking place.

If you're low on sensitivity and can stomach the mindless violence, you should get some fun out of it for a few hours.

Sandra Grandison

RATING (/5)

Lasting appeal	
Playability	
Use of machine	
Overall value	

PCN PROGRAMS: AMSTRAD CPC464

The Treasure of Middle Earth

Title: The Treasure of Middle Earth
Machine: Amstrad CPC464
Language: Locomotive Basic
Application: Adventure game
Author: Steve Lucas

This eventful adventure game for the Amstrad CPC464 comes from Steve Lucas of Cheadle Hume in Cheshire.

Many years ago an evil troll ventured into the quiet and untroubled lands of Middle Earth and stole four items of their much prized treasure: a diamond necklace, a large ruby, a silver stake and an antique dagger.

The unhappy villagers decided to send their local hero, Fred, to search the outlands for the treasure. Fred never returned. With no idea what horrible fate he may have encountered, you bravely set out to find him — and, of course, the treasure.

The outlands turn out to be a distinctly undesirable place. Everwhere you go there seem to be obstructions, sometimes of a particularly unpleasant nature, and you might well find the following tips very useful:

1 Dogs like something they can get their teeth into.
2 Fred is not a well man.
3 Vines will grow given the right encouragement.
4 Dwarves like a good drop of ale.
5 Hobgoblins are afraid of dwarves.
6 The old man is not what he seems.
7 Oil will release rusty items.
8 Don't forget to water the plants.
9 No damsel will refuse a present.
10 Heard the one about a handsome prince who turns into a frog?
11 Little Weed needs a new pot.
12 Vampires are not very keen on crucifixes.
13 The Count needs a great deal of persuasion ... perhaps a stake thrown at him.
14 The man will let you through if you give him something ...

and the plot thickens ...

As you can see, there are rather a lot of things to be reckoned with in your perilous pursuit of Fred and the treasure. PCN

Program notes

10-30	Titles
40	Set up screen
50	GOSUB to the instruction page
60	Dimension arrays
80-120	Read in data
130-200	Which directions can you take?
210	You have found Fred and all four items of treasure and have completed the mission
240-280	Looks to see which objects are around you
290-310	Waits for input
320-350	North, South, East or West?
360	Your score:— percentage depending on how many items of treasure you have collected
370-490	Looks for input and goes to relevant subroutine
500-1180	Various subroutines which print messages depending on your location and the objects you have and then changes the variables
1190-1240	Checks if you have found all the treasure and Fred
1340-1660	Data
1670-1710	Introduction page

```
10 REM ** The Treasure of Middle Earth *
*
20 REM ** an adventure for the AMSTRAD C
PC 464 **
30 REM ** (C) Steve Lucas July 1984 **
40 MODE 1:INK 0,0: INK 1,24: INK 2,20: I
NK 3,6
50 CLS:GOSUB 1670
60 DIM q$(60),g$(50),s%(50,4),v$(5),b%(6
0),n$(70),n%(70),x$(70)
70 RESTORE:m%=0:p%=2
80 FOR x=1 TO 46:FOR y=1 TO 4:READ s%(x,
y):NEXT:READ q$(x):NEXT
90 FOR x=1 TO 37:READ g$(x),b%(x):NEXT
100 FOR x=1 TO 53:READ n$(x),n%(x):NEXT
110 FOR x=1 TO 61: READ x$(x): NEXT
120 CLS
130 WHILE rr%<> 25
140 IF p%=36 AND b%(6)=0 THEN p%=29+RND(
4)
150 PEN 1:PRINT:PRINT"I am :-"
160 PEN 2:PRINT q$(p%): a$="":IF s%(p%,1
)>0 THEN a$="North"
170 GOSUB 1190
180 IF s%(p%,2)>0 AND LEN(a$)>0 THEN a$=
a$+",South" ELSE IF s%(p%,2)>0 THEN a$=
South"
190 IF s%(p%,3)>0 AND LEN(a$)>0 THEN a$=
a$+",East" ELSE IF s%(p%,3)>0 THEN a$="E
ast"
200 IF s%(p%,4)>0 AND LEN(a$)>0 THEN a$=
a$+",West" ELSE IF s%(p%,4)>0 THEN a$="W
est"
210 IF a%=5 THEN CLS: LOCATE 15,5:PEN 1:
PRINT"Well Done": LOCATE 5,20:PEN 2:PRI
NT"You have completed your mission": END
220 PEN 1: PRINT:PRINT"I can go :-": PEN
 2:PRINT a$
230 IF p%=22 AND s%(22,3)=0 THEN PRINT x
$(55)
240 e=0: FOR x=1 TO 37:pp%=0: IF b%(x)=p
% THEN pp%=1
250 IF pp%=1 THEN 270
260 NEXT x: GOTO 290
270 IF e=0 THEN PEN 1:PRINT:PRINT"I can
see :-"
280 PEN 2:PRINT g$(x):e=1: GOTO 260
290 PEN 1: PRINT:PRINT"What shall I do h
ere "!:INPUT z$
300 z$=LOWER$(z$):b$=LEFT$(z$,2):c$=LEFT
$(z$,3):d$=LEFT$(z$,4)
310 CLS
320 IF (b$="n" OR d$="go n") AND s%(p%,1
)>0 THEN p%=s%(p%,1)
330 IF (b$="s" OR d$="go s") AND s%(p%,2
)>0 THEN p%=s%(p%,2)
340 IF (b$="e" OR d$="go e") AND s%(p%,3
)>0 THEN p%=s%(p%,3)
350 IF (b$="w" OR d$="go w") AND s%(p%,4
)>0 THEN p%=s%(p%,4)
360 IF c$="sco" THEN GOSUB 1190: PEN 3:P
RINT"You have scored :-"j&%&20!* %"
370 IF c$="get" OR c$="tak" OR c$="gra"
THEN GOSUB 450
380 IF b$="pi"OR b$="fu" THEN GOSUB 1250
 ELSE IF c$="hel" THEN GOSUB 1120
390 IF c$="dro" OR c$="lea" OR c$="put"
THEN GOSUB 720
400 IF c$="loo" THEN PRINT"I can't see a
nything special" ELSE IF c$="pra" THEN G
OSUB 1310
```

```
410 IF c$="sho" OR c$="hit" OR c$="kil"
THEN GOSUB 930 ELSE IF c$="exa" THEN GOS
UB 970
420 IF c$="thr" OR c$="rub" THEN GOSUB 1
080 ELSE IF c$="inv" THEN GOSUB 1040 ELSE IF
430 IF c$="use" THEN GOSUB 1100
440 WEND
450 GOSUB 1130
460 IF l$="plant" THEN PRINT"Sorry I can
't do that !"
470 IF L%<>1 THEN RETURN
480 e%=0:FOR x=1 TO 37: IF b%(x)=p% AND
b%(n%(r))=p% THEN e%=1
490 NEXT:IF e%=0 THEN RETURN
500 IF p%=12 AND r=30 THEN PRINT x$(3):R
ETURN
510 IF p%=16 AND r=31 THEN PRINT x$(4):R
ETURN
520 IF p%=27 AND r=32 THEN PRINT x$(5):R
ETURN
530 IF p%=10 AND r=34 THEN PRINT x$(7):R
ETURN
540 IF p%=42 AND r=33 THEN PRINT x$(6):R
ETURN
550 IF p%=25 AND (r=35 OR r=36) THEN PRI
NT x$(8):RETURN
560 IF p%=14 AND (r=1 OR r=2) AND b%(2)=
-1 THEN 680
570 IF p%=45 AND (r=37 OR r=38) THEN PRI
NT x$(45):RETURN
580 IF p%=34 AND r=39 THEN PRINT x$(46):
RETURN
590 IF p%=21 AND (r=44 OR r=45) THEN PRI
NT x$(49):RETURN
600 IF p%=14 AND (r=1 OR r=2) AND b%(2)<
>14 THEN PRINT x$(17):RETURN
610 IF p%=13 AND (r=18 OR r=19) AND b%(1
3)<>13 THEN PRINT x$(19): RETURN
620 IF p%=9 AND (r=6 OR r=7) AND b%(3)=9
 THEN 680
630 IF p%=9 AND (r=6 OR r=7) AND b%(13)=
9 THEN PRINT x$(21):RETURN
640 IF p%=9 AND (r=6 OR r=7) AND b%(13)<
>9 THEN PRINT x$(36): RETURN
650 IF p%=29 AND b%(4)<>29 THEN PRINT x$
(54): RETURN
660 IF p%=28 AND (r=15 OR r=16) AND b%(1
1)<>28 THEN PRINT x$(56):RETURN
670 IF p%=28 AND (r=15 OR r=16) AND b%(1
1)=28 THEN g$(10)=x$(57):b%(11)=-1
680 e%=0
690 FOR x=1 TO 3:IF v$(x)="" THEN v$(x)=
g$(n%(r)):e%=1:x=5
700 NEXT:IF e%=0 THEN PRINT x$(38):RETUR
N
710 b%(n%(r))=0:RETURN
720 GOSUB 1130
730 IF L%<>1 THEN PRINT"I can't see a "i
L$: RETURN
740 e%=0: FOR x=1 TO 3:IF v$(x)=g$(n%(r)
) THEN v$(x)="":e%=1
750 NEXT:IF e%<>1 THEN PRINT x$(39):RETU
RN
760 b%(n%(r))=p%
770 IF p%=7 AND r=24 THEN PRINT x$(1):s%
(7,2)=12:b%(16)=-1:g$(7)="By an open gat
e"
780 IF p%=12 AND (r=26 OR r=27) THEN PRI
NT x$(2):s%(12,2)=17:s%(12,3)=13:b%(20)=
-1:b%(18)=0
790 IF p%=14 AND (r=3 OR r=4) THEN PRINT
 x$(9):g$(1)=x$(13):b%(2)=-1
800 IF p%=37 AND r=5 THEN PRINT x$(20)
810 IF p%=29 AND (r=6 OR r=7) THEN g$(5)
=x$(14):PRINT x$(12)
820 IF p%=28 AND r=11 THEN PRINT x$(16)
830 IF p%=13 AND r=28 THEN PRINT x$(18)
840 IF p%=45 AND r=25 THEN PRINT x$(20):
s%(45,1)=46:b%(26)=-1:b%(17)=-1
850 IF p%=22 AND (r=49 OR r=50) AND b%(3
3)=22 THEN PRINT x$(61):x$(55)=""
860 IF p%=22 AND (r=47 OR r=48) AND b%(3
2,3)=23:g$(33)=x$(61):x$(22,2)=30:s%(2
4)=22 THEN PRINT x$(53):s%(22,2)=30:s%(2
2,3)=23:g$(33)=x$(61):x$(55)=""
870 IF p%=27 AND b%(12)=27 THEN PRINT x$
(40): IF b%(1)=0 THEN PRINT x$(41):s%(27
,2)=39:s%(27,3)=28:b%(12)=0:g$(22)=x$(58
)
880 IF p%=27 AND b%(1)<>0 THEN PRINT x$(
42):b%(12)=13
890 IF p%=21 AND r=53 THEN PRINT x$(47):
s%(21,2)=29:b%(32)=0:b%(53)=0
900 IF p%=13 AND (r=19 OR r=18) AND b%(1
3)=13 THEN PRINT x$(18):
910 IF p%=34 AND r=8 THEN PRINT x$(25):s
%(34)=35:b%(5)=-1:b%(27)=-1
920 RETURN
930 IF p%=18 AND b%(7)=0 THEN PRINT x$(2
7):s%(18,3)=5:g$(24)=x$(28):RETURN
940 IF p%=29 AND m%=0 THEN PRINT x$(29):
RETURN
950 IF b%(7)<>0 THEN PRINT"I have no wea
pon!":RETURN
960 PRINT x$(30):RETURN
970 GOSUB 1130:IF b%(8)=0 AND r=12 THEN
980 IF p%=25 AND (r=35 OR r=36) THEN PRI
NT x$(34):RETURN
990 IF b%(15)=0 AND r=15 THEN PRINT x$(2
9):RETURN
1000 IF p%=24 THEN PRINT x$(37):RETURN
1010 IF (r=47 OR r=48) AND b%(33)=0 THEN
 PRINT x$(23):RETURN
1020 IF (r=22 OR r=23) AND b%(15)=0 THEN
 PRINT x$(22): RETURN
1030 PRINT x$(35):RETURN
1040 PRINT"I am carrying :-":PRINT"a CRU
CIFIX around my neck and :-"
1050 f%=0:FOR x=1 TO 3:IF v$(x)<>"" THEN
 PRINT v$(x):f%=1
1060 NEXT:IF f%=0 THEN PRINT"nothing els
e !"
1070 RETURN
1080 IF p%=16 AND b%(21)=16 AND b%(15)<>
0 THEN PRINT x$(48):s%(16,2)=21:s%(16,3
)=22:b%(21)=0: RETURN
1090 RETURN
1100 GOSUB 1130:IF p%=42 AND r=28 THEN P
RINT x$(31):s%(42,3)=40:g$(23)=x$(24):RE
TURN
1110 PRINT x$(32):RETURN
1120 PEN 2:PRINT"I'm as confused as you
are, but I'd try praying !":RETURN
1130 L$="":FOR x= 1 TO LEN(z$)
1140 IF MID$(z$,x,1)=" " THEN L$=RIGHT$(
z$,(LEN(z$)-x)):x=90
1150 NEXT
1160 r=0:L%=0:IF LEN(L$)<2 THEN RETURN
1170 FOR x=1 TO 53: IF LEFT$(n$(x),LEN(L
$))=L$ THEN L%=1:r=x
1180 NEXT:RETURN
1190 a%=0: IF b%(6)=2 THEN a%=a%+1
1200 IF b%(8)=2 THEN a%=a%+1
1210 IF b%(9)=2 THEN a%=a%+1
1220 IF b%(10)=2 THEN a%=a%+1
1230 IF b%(15)=2 THEN a%=a%+1
1240 RETURN
1250 CLS: LOCATE 1,12:PRINT"You dirty fi
lthy beast!!!!!!!!!!!!!!!"
1260 PRINT:PRINT: PEN 2: PRINT"How dare
you speak to me like that ?"
1270 PRINT:PRINT:PRINT:PEN 3: PRIN
T"What have you got to say for yourself
 "i
1280 INPUT z$:z$=LOWER$(z$)
1290 IF LEFT$(z$,4)<>"sorr"THEN PRINT"Th
at's not good enough !": GOTO 1250
1300 RETURN
1310 PRINT"Nothing special happened !":
RETURN
1320 GOSUB 1130: IF LEFT$(l$,3)="mon" TH
EN PRINT"It is not pleased !": RETURN
1330 PRINT"Don't be ridiculous !": RETUR
N
1340 DATA 2,0,0,0,outside a garden shed.
The door is      locked. I can just see
some tools       through the dirty wind
ow.,43,1,3,8,in a pawn broker's shop. A
sign here        reads 'GOOD PRICES GIVEN',0
,9,4,2
1350 DATA walking along a path through s
ome trees,0,10,0,3,on a dirt track. Ther
e seem to be more  trees here.,0,11,6,10
,at a fork in the path. A misty mountain
 can be seen to the North.
1360 DATA 0,0,0,5,on a narrow pathway. T
he trees are so  dense on either side t
hat I can't leave the path.,0,0,8,0,by a
small gate. An angry dog snarls    at m
e .,0,0,2,7,in a small backyard. The dus
tbins are  full of old bones.
```

PCN PROGRAMS: AMSTRAD CPC464

```
1370 DATA 3,0,0,0,in a country inn. The
bar is well      stocked but I can't ge
t near to it     because of the crowds.
,4,0,0,0,at the edge of a dense forest.,
5,0,16,0,in a clearing in the middle of
the dense forest.
1380 DATA 7,0,0,0,in a small enclosure.
Broken pots lie      everywhere.,0,0,14,12,
in a small garden. There's a small clump
of rhubarb in one corner but little else
,0,18,0,13,by a large tombstone engraved
with      strange symbols.
1390 DATA 0,19,0,0,in a small outhouse.
An old mangle lies in one corner and a p
ile of clean      clothes in another.,0
,0,0,11,at the side of a small stream.,1
2,25,26,0
1400 DATA in a gloomy tunnel. Water drip
s down thewalls which are covered in fou
l smellingslime !,14,0,19,0,on a railway
embankment,15,27,0,18,at the entrance t
o a cottage.,0,28,0,0,in a laboratory. T
he walls are lined      with bottles of st
range potions
1410 DATA 16,0,0,0,on a wide bridge cros
sing a fast flowingriver.,0,0,0,16,deep
in the forest,34,0,0,22,in a surgery.,0,
0,31,0,in a magnificent hall. Carved fig
ures      line the walls,17,0,42,0,in a dim
ly lit tunnel
1420 DATA 0,42,0,17,in a large cavern. S
talagtites and      Stalagmites of pure
ice are everywhere,19,0,0,0,in the hall,
20,38,0,27,in a hospital ward. The patie
nts look upat me anxiously.,21,0,0,0,at
a dead end
1430 DATA 22,0,32,0,in a small cavern li
t by light from a      tiny slit high above
me.,32,0,0,24,by the side of a wide lak
e,0,31,33,30,in a vast cavern. There's a
bottomless      pit in the middle and a str
ange carving on the wall.,36,37,0,32
1440 DATA in an old mansion.,0,23,0,0,in
an annex.,41,41,41,34,not quite sure wh
ere I am ',36,36,36,36,completely lost i
n the forest,33,0,0,0,in the dungeons,28
,0,0,0,in a broom cupboard,27,0,0,0,in a
long straight passage,0,0,0,42,in an ee
rie crypt
1450 DATA 41,41,41,35,in a swirling mist
,26,0,0,25,in a small cave,0,2,45,44,in
a large greenhouse which is full of cuc
umber plants.,0,0,43,0,at the far end of
the greenhouse. The      staging is full o
f trays of triffid      seedlings.,0,0,0,
43
1460 DATA outside a workmans hut. The me
n are      huddled around a small stove.,
0,45,0,0,inside the workmans hut.,a gian
t frog,14,a damsel,37,a leather wallet f
ull of money,30,a glass of ale,9,an old
dwarf,29,a ** RUBY ** ,33,a loaded pisto
l,46
1470 DATA a ** DIAMOND ** necklace,41,an
** ANTIQUE ** dagger,38,my old friend *
* FRED ** . He looks ill,28,Dr Dracula's
cure all medicine,31,a fuschia plant in
full bloom,13,a bucket of water,11,a wo
rthless trinket (I think!),39
1480 DATA a ** SILVER ** stake (just rig
ht for      vampires !,40,an old bone,4,a
can of oil,15,a dirty plant pot,43,a pla
stic crucifix,6,BILL & BEN standing guar
d outside the      entrance to a tunnel,12,
the COUNT OF DARKNESS,16,The owner. He l
ooks annoyed
1490 DATA 27,an evil vampire with six in
ch fangs,42,a strange looking old man in
a black      cloak who refuses to let me
pass,18,an empty coffin covered with mud
,25,a rusty lock,45,an evil goblin with
halitosis      (BAD BREATH),34
1500 DATA a small casket without a lid,2
6,a lid off something,24,a small pony,32
,a sleeping monster,23,a greedy little O
RC who guards the way,21,a tiny little v
ine with a small label      attached,3, a p
acket of growmore fertiliser,44
1510 DATA a brass ornament,2,some evil s
melling slime,20,some mushrooms,18,frog,
1,prince,1,damsel,2,lady,2,wallet,3,ale,
4,beer,4,dwarf,5,ruby,6,pistol,7,gun,7,d
iamond,8,antique,9,dagger,9,fred,10,frie
nd,10
1520 DATA medicine,11
1530 DATA plant,12,flowers,12,water,13,b
auble,14,silver,15,stake,15,bone,16,oil,
17,dirty,18,pot,18,crucifix,19,plastic,1
9,guard,20,count dracula,21,owner,22,vam
pire,23,man,24,coffin,25,corpse,25,door,
26,lock,26,goblin,27
1540 DATA casket,28,lid,29,pony,30,sleep
ing,31,monster,31,orc,32,guard,32,vine,3
3,label,33,packet,34,fertiliser,34,brass
,35,slime,36,mushrooms,37
1550 DATA The dog grabs the bone and run
s away,Ben grabs it and runs away shouti
ng      'Just right for WEED's birthday p
resent'
1560 DATA You have to be joking !,Have y
ou seen those fangs dripping with blood
?....no way !!!!,I know I'm superman but
even I can't      lift him !,What do you t
hink I am ...a SUCKER ?,As I approach hi
m he brings out a sword
1570 DATA I'm not carrying that .. it sm
ells !,The damsel kisses the frog and so
methingmagical happens!,The soil's too h
ard. It needs water,The soil is soft eno
ugh now,The old dwarf drinks his ale and
smiles,A handsome PRINCE
1580 DATA an old dwarf. He is happy to c
ome now!,Fred is still too ill to be mov
ed,Healthy Fred,The Frog hops out of the
way,Some water falls from the bucket an
d      moistens the soil,The Plant's not i
n bloom,After a second the lock opens
1590 DATA The landlord takes one look an
ars an inscription but it is too      faded
to read,The Label reads 'Use GROWMORE f
or best      results',The dark opening to a
crypt,He chases the hobgoblin away with
his      axe
1600 DATA nothing happens,The dead body
turns into a heaving mass of green slime
,A rather smelly MOULD MONSTER which has
blue venom dripping from its pointed
tongue,Whoops...missed it,Bang. Nothing
happened
1610 DATA The vampire flees for its deat
h,It doesn't do anything at the moment,T
he vampire has already gone,They look va
luable,I can't see anything unusual,The
landlord doesn't seem to like that!
1620 DATA It bears the inscription 'The
perfect      Gift for everyone',My hands ar
e full,I've not got it,He says 'You chea
cky young ******,I'll let you pass,He sa
ys 'You'll not      get past me that easily
,Watch out I've been spotted,I've just b
een attacked
1630 DATA It's too rusty to move,I can'g
get near enough for the smell !,It eats
the mushrooms and falls into a      stupor
(They must have been toadstools),Straigh
t through the heart. The count's body fa
des away and I grab the stake      back qu
ickly
1640 DATA They are too dangerous to do t
hat,Seems like a good idea,The pony has
just collapsed,This is getting boring,Th
e vine spurts into rapid growth. I      th
ink I could climb it,He says 'Cor Blimey
.. Where's me beer ?'
1650 DATA There is a wall here but it is
too tall to climb. The ground looks ver
y fertile,Fred is too ill to travel,my h
ealthy friend FRED,He looks a little hap
pier,I can see a half decomposed body,I'
m sorry I can't understand that
1660 DATA The vine grows so much that I
think I      could use it to climb over the
wall
1670 BORDER 26:LOCATE 5,2: PEN 1:PRINT"T
he Treasure of Middle Earth"
1680 PEN 2: LOCATE 2,4:PRINT"An adventur
e for the Amstrad CPC 464"
1690 LOCATE 3,6:PEN 3: PRINT"(C)      Ste
ve Lucas      July 1984 ":PEN 1
1700 LOCATE 1,18:PRINT"You have been sen
t by the villagers to      try to find and r
ecover the five items      of treasure which
were stolen from the      village by the ev
il Troll."
1710 RETURN
```

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CBM64 games. Flight Path 737 and Mr Wimpy, £5 each or both for £8. Tel: Huntingdon 810994.

DKTronics Spectrum keyboard £25; Sinclair printer plus spare paper roll £20; Spectrum software. Please phone for details. Tel: Phil on Pontefract (0977) 795904.

Atari: printer and disk utility software for sale for use with personal computers. All disk-based. Tel: Slough (0753) 28029.

HP41C (given) brand new and unboxed. £75 ono. I've bought an HP71C. Tel: 01-660 0092 after 6.30pm (Croydon area).

48K Spectrum, light-rifle, cassette recorder, cassette case, collection of *PCN*, many top games. £200 ono. Tel: Steve on 0203 418809 after 4.30pm.

Z80 development system consisting of Newbrain A, monochrome monitor, cassette recorder, and Professional assembler programming language, technical manuals, and other programs. £160 ono. Tel: St Albans 33466.

Electron games for sale. Felix in the Factory, Pettigrews Diary, Escape from Moonbase Alpha. £4.50 each. 25, Orwich Road, Mochdre Colwyn Bay, Clwyd, LL28 5AG.

For sale, new Atari 800XL £150, new 1010 recorder £30. For Atari: new Blackthorn printer interface (with cable), £55. Touch tablet £40. Tel: Slough 71392.

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Vic 20, 3K RAM pack, joystick, toolkit chip, monitor chip, 4 games tapes, clone cassette deck, £75. Tel: 01-451 0520.

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Sinclair interface I &2. Micro drives with 6 catridges, as new—£110. Currah Speech £15. DK Tronics light pen £10. Tel. Rushden (0933) 59167.

Atmos 48K, brand new c/w tape player, four inline 13A sockets, 1 years subscription Oric Owner — £120 ono. M.J. Swanson, Spilsby, Lincs. Phone Spilsby 52120.

Oric 48K +£70 software for sale — £80 ono. Tel Ilkeston (0602) 306030 after 4pm or will exchange for CBM disk drive, will make up difference.

Oric 1 48K, 6 games, over 1 year's guarantee, two Oric owner mags, excellent condition, total value £180, sell for only £120 ono. Ring Paul (0772) 720538.

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BBC B OS 1.2, disk drive, Watford DFS, Disk Doctor, Exmon. Tape recorder, joysticks lots of software, manuals. Tel: 01-657 2161 evenings or weekends offers £700 ono.

48K Spectrum for sale, DKTronics keyboard, Kempston Joystick Interface, ZX printer, £200 software, £20 books. Tel Saddleworth (04577) 4086 (ask for Nick) for details.

CBM 64 original software for sale, perfect condition, less than half price. Tel 01-254 7758 after 5pm

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Dragon 32, joysticks, £360 + software, books, listings, Dragon user magazines £350 ono. All in good condition. Tel. 01-472 5537 any time after 5.30pm.

BBC original software for sale. Wordwise plus Spelling checker — £25.00, programable Quickshot I — £12.00. Spectrum software wanted Phone Clive at Ruislip 30965 after 6.30pm.

Seikosha GP100A printer — Centronics interface, ideal for BBC, Dragon etc, Excellent condition £130 ono. Contact Harry at 01-603 9315. Also sideways ROM board — £30 ono.

ZX81 plus 16K. Good condition — £35. Tel: Rugby 60933.

Dragon Software, swap many titles inc. Zaxxon, Grabber, Chuckie Egg and many more. Tel: Richard 01-467 9885. Address: 22 Camden Park Road, Chislehurst, Kent BR7 5HG.

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Commodore Pet 3032, 3040 dual disk drive, C2N cassette recorder, sound board, lots of software, lightpen, of software, lightpen. £350 the lot. Tel. 01-951 2497 (day) 0582 872575 (eve).

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Oric 1 48K — Includes leads, mains adaptor and software (including Oric-Base). Very good condition and hardly used. A bargain at only £100 or nearest offer. Tel. 021-358 6250.

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Commodore 64 for sale. Reference guide, tapes, games, cartridges, assembler tutor course, etc. £180 takes all. Copthorne (0342) 712263.

Spectrum 48K, ZX printer, 9 rolls of paper, Kempston joystick and interface, loads of software — £190. Phone Weston-super-Mare, 0934-512106 (evenings only).

Wanted UK101 RAM/EPROM/32×48 boards, also Basic 3/4/5/X/Toolkit/Word Wizard for Cegmon and any software. Phone Sheffield (0742) 384474 after 6pm.

TI 99/4A new Nott's 99er's user group. Monthly news letters, new members welcome. Details from Gordon Tomunson 75A Rossell Drive Stapleford, Nottingham. NG9 7EG. Tel. 0602-399973.

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Mattel intellivision cartridges Tron, Astrosmash, Poker, Sea Battle, Hockey, Armour Battle, Golf, Utopia, Checkers, Space Armada Tennis, Basketball, Triple Action. Offers Pudsey 561760.

Sinclair ZX-Spectrum user seeks penpal(s) (boys or girls) to swap ideas and programs. I speak English, German, Dutch. Paul Kolenbrandee (24 years) Turfvledenstraat 37 Eindhoven Holland.

Dragon 32 help! How do I visualize bearing and distance in PMODE 4 (30 pixels per nautical mile)? Ideas to Vandervorst Wancour-Straat 16 B-8410 Wenduine Belgium.

Oric Atmos + books + lots software-Xenon-1 Zorgons M.A.R.L. etc + victagraph plot window cost £260 new for sale £120. Tel: (0222) 842817.

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Spectrum 48K D.K-keyboard, Interface 2, Joystick, data recorder, amplifier, alphacom printer, software, books, magazines, lightpen, —£200 87 Derby Lodge. Wicklow St. London WC1.

Sell or swop BBC B Computer with extras or Commodore 64 plus extras, or Commodore 64 plus money or £350 no offers bargain. Tel: 051-263 3334.

Boy needs Sinclair ZX printer with paper. Can only afford £25, Tel. (0423) 60575 eves.

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Will someone buy my printer. Seikosha GP-250X (not GP-100), hardly used, excellent condition, new ribbon, cable, screen dump (BBC), paper £155. Tel Wentworth 2621.

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Send SAE for list of VIC 20 games, books, etc, at ridiculously low prices. Contact Jonathan Mundy, Long Meadow, Sandy Lane, Northwood, Middlesex.

Oric 1 software, 48K, Space Shuttle £6, Colossal Adventure £6.50, 16K, Harrier Attack, £4.50, Abson 2884.

Atari 16K board for sale or swap. Will also swap software. Also for sale, Gorf cartridge £10. Tel. Mark (0495) 247328 anytime.

Nascom two 32K 19 inch rack, suit hardware hacker. Exchange for Vic 20 (cassette less) is needed for project. Deliver in North-west. Tel McKenzie, Preston (0772) 864599.

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BBC B with DFS and ATPL ROM board £385 ono. Teletext adaptor, as new, £175 ono. Electron, £165 ono Microware D-DFS, £85 ono. wordwise £25. Tel: Canterbury 750 600.

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Currah 220M digital cassette drive for Vic 20, 6 tapes. Cost £170, will sell for £90. Write to J. Brandwood, 3 Renny Street, Durham.

Video Genie 16K, sound tape — £60. V.G. expansion box 32K — £80. Ikegami monitor — £50. Microware twin drives 40 track — £190. Tony 01-693 8975.

Wanted: Dead Dragons. Write to Elvin, 214 Horninglow Rd, Sheffield. Regardless of condition, receive my offer by return. Also software.

Apple II system sold, but some cards left: language, serial, 80-column, Z80— £25 each. FDOS £15, Forth II £15, Rewtel mudem £20, CP/M software Tel: 01-841 2788.

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SYNTAX ERRORS

Our apologies to any reader who bought Chartpack-64 on the strength of our review (issue 73), and finds they can't use it as they wanted.

The article implies the program can produce graphs from a spreadsheet — we should have pointed out that the spreadsheet must be *Visacalc*. Secondly, while there may be a special version for Epson printer owners, you still need an expensive printer interface, because the program overwrites the user area in which you may have set up a printer driver using the user port.

The moral of this unfortunate tale is 'check carefully with your software supplier about hardware and software compatibility before buying'.

Oric screenplay in store

The Oric Atmos is starring in a Dixons frame-up horror. The electrical chain describes the Atmos in its catalogue as the 'brilliant new computer that saves on RAM capacity by storing hi-res graphics on the screen!' And what better place for high-resolution graphics? Well done Oric, says *PCN*. Just in case you're in a panic, and you want to use your screen for something else, like typing in a program, we should point out that you can also store them in memory . . .

Meanwhile life isn't all it might be on the good ship Oric. The company is suing its erstwhile advertising agency, Saatchi and Saatchi subsidiary KMP, for 'wrongful advice'. It's possible Oric means 'incorrect' but the word wrongful has hidden facets of meaning that set the old mind boggles in motion.

According to the *PCN* dictionary, 'wrongful' can encompass meanings as diverse as 'unfair' and 'not legal' — and wouldn't it be fascinating if the latter were what was meant?

Picture the KMP advisers suggesting that sales could be boosted by photographing potential customers in compromising situations with a ZX81. Or perhaps recommending that the best way of increasing sales is to falsify the accounts . . . No it couldn't be . . .

Sweet talk

Computerland, when asked if the store would be stocking the new Commodore machines — the C16 and the Plus/4 — quickly replied: 'No . . . definitely not. We only stock the top range of computers here. We leave machines like the C16 and the Plus/4 to sweetshops and newsagents.'

Spanish links stretched

Has Eurohard, Spanish rescuer of the Dragon, been busier than we thought?

On the front of a box of matches labelled Endangered Animals of the World is a picture of a forlorn-looking creature and the caption: No 16, The Spanish Lynx.

NEXT WEEK

Sweet 16 — *Can the Commodore 16 follow the Vic 20's act? We take the wraps off.*

Crime-buster — *Ronnie Robber takes on the Spectrum, with full listing and notes.*

Amstraddled — *Ars longa, and never longer or more absorbing than this feature on the CPC464.*

Fitt for a Beeb — *We Pro-Test the Parfitt plotter, a versatile addition to the BBC's range.*

Comal 64 — *Highly rated in schools, Comal could be the language for you on the Commodore 64.*

Program — *To Atari owners we offer a version of Snake.*

Gameplay — *There's a round-up of Amstrad software and reviews of the latest for Atari and Commodore systems.*

PCN DATELINES

PCN Datelines keeps you in touch with up-coming events. Make sure you enter them in your diary.

Organisers who would like details of coming events included in PCN Datelines should send the information at least one month before the event. Write to PCN Datelines, Personal Computer News, 62 Oxford Street, London W1A 2HG.

UK EVENTS

Event	Dates	Venue	Organisers
Games Day '84	Sept 1-2	RHS New Hall, London	Turner Pitt & Associates, 01-499 5018
IBM System User Show	Sept 3-5	Olympia, London	EMAP International Exhibitions, 01-837 3699
Concerned Technology in Education International Conf and Exhbn	September 3-7	Meadowbank Stadium, Edinburgh	Mary Pipes, Michael Joyce Consultants Ltd, 01-836 6801
Hampshire Computer Fair	Sept 6-7	Guildhall, Southampton	Testwood Exhibitions, 0703-31557
Walthamsoft '84	September 8	Walthamstow, London	London Exhibitions and Promotions, 01-554 5039/3498
PCW Show	Sept 19-23	Olympia, London	Montbuild, 01-486 1951
Computer Communication & Control	Sept 26-28	Brighton Centre	Institution of Electrical Engineers, 01-240 1871
Computer Technol Exhbn — Comtec	October 3-5	Spennymoor, co. Durham	Industry Section, Sedgefield District Council, 0388-816166
Computer Graphics FX Exhibitions	October 9-11	Wembley, London	Online Conferences Ltd, 01-868 4466
Apricot & Sirius Computer Show	October 16-18	Manchester	Paradox Group Ltd, 01-241 2354

OVERSEAS EVENTS

Event	Dates	Venue	Organisers
Internat Exhbn of Data Processing, Commun, etc — SICOB	Sept 19-28	Paris, France	French Trade Exhibitions, 01-439 3964
SE Asia Regional Computer Conference	Sept 24-27	Hong Kong	Industrial & Trade Fairs International, 021-705 6707
Caribbean Computer & Commun Exhbn and Conf — Caribecom	September 25-27	San Juan, Puerto Rico	AESI Ltd, 01-379 7628

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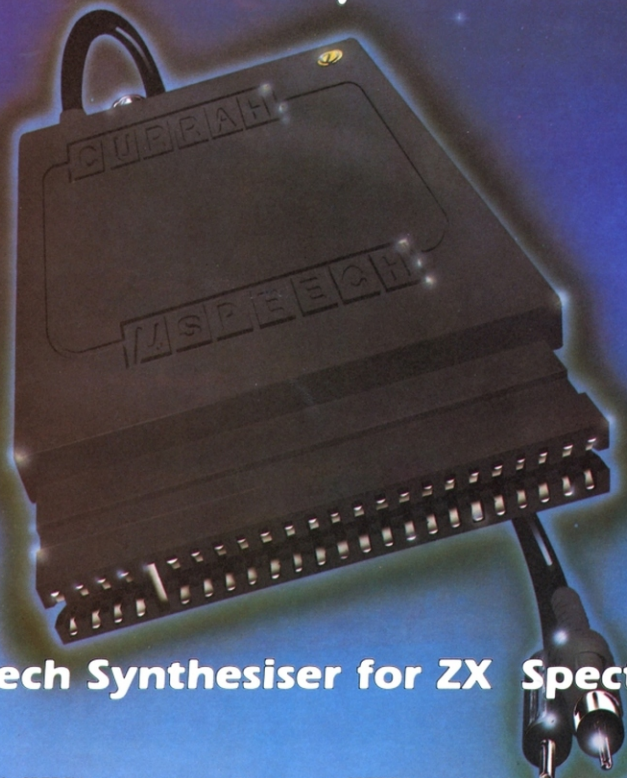

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